User's Manual

ECB-862 Series

Intel Pentium III Full-size PICMG CPU Card
with 4 USB 2.0, Audio, & Dual 10/100 Base-Tx Ethernet

3rd Ed. – 20 May, 2005

Part No.2047862000

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(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

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This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Evalue, or which have been subject to misuse, abuse, accident or improper installation. Evalue assumes no liability under the terms of this warranty as a consequence of such events. Because of Evalue's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If any of Evalue's products is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details. If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU type and speed, Evalue's products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.

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3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.

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5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 ECB-862 Series Pentium III Full-size CPU card
- 1 Quick Installation Guide
- 1 CD-ROM contains the followings:
  - User's Manual (this manual in PDF file)
  - Ethernet driver and utilities
  - VGA drivers and utilities
  - Audio drivers and utilities
  - USB2.0 drivers and utilities

- Cable set includes the followings:
  - 1 ATA-100 IDE cable (40-pin, pitch 2.54mm)
  - 1 FDD cable (34-pin, pitch 2.54mm)
  - 1 Bracket with one printer and one serial port (10-pin, 2.54mm/26-pin, pitch 2.54mm)
  - 1 PS/2 keyboard and mouse Y cable (6-pin, Mini-DIN)
  - 1 Bracket with audio/2 USB/TV connector (P/N: 9697000104, ECB-862 only)
  - 1 Flat cable DuPont 10P/2.54mm-10P/2.0mm 15cm (ECB-862 only)
  - 1 Flat cable IDC 16P/2.54mm-16P/2.54mm 15cm (ECB-862 only)

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

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Document Amendment History

Revision	Date	By	Comment
1st	October, 2003	Stephen Tsao	Initial Release
2nd	March, 2004	Stephen Tsao	Add in 3.9.27 LCD panel connector description (page 37)
3rd	May, 2005	Stephen Tsao	1. Modify CN19 USB pin definition 2. CN8's signal updated. 3. Cn13's signals modified from USBG0/1 to GND. 4. Moved CN15-17 tables between CN13 & CN18. 5. CN18, CN19, CN24, PWR1 modified VCC to +5V. 6. CN21 table modified to the right way. 7. CN23 table modified to the right way and VCC to +5V. 8. VR1 & VR2 tables rotated to the right way and modified VCC to +5V.

1. Manual Objectives

This manual describes in detail the Evalue Technology ECB-862 Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board. The manual is sectioned and includes a User's Guide that will help the non-technical user to get the unit up and running. A Troubleshooting Guide is also included to help when things go wrong.

We strongly recommend that you study this manual carefully before attempting to interface with ECB-862 or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

2. Introduction

2.1 System Overview

The ECB-862 is an all-in-one Full-size Pentium III Single Board Computer (SBC) designed with Intel embedded chipset VIA 8602 which supports the latest Intel Pentium III CPU with FSB up to 133 MHz, dual PCI-bus Fast Ethernet controllers, and M-Systems DiskOnChip socket.

Targeting on the mission critical telecommunication or industrial applications, the ECB-862 comes designed with VIA 8602 Chipset. This makes it a perfect solution for not only popular Networking Devices like Firewall, Gateway, Router, and e-Server, but also CTI (Computer Telephony Integration) equipments such as PBX, Digital Logger, etc.

Other onboard features include 133 MHz FSB, four UDMA 100 IDE channels, two 16C550 compatible serial ports (one RS-232, one RS-232/422/485), one multi-mode parallel port, and two 168-pin SDRAM sockets allowing for up to 1GB of SDRAM to be installed.

2.2 System Specifications

General Functions

- **CPU:** Universal Socket 370 supports Intel FC-PGA/FC-PGA2 Pentium III / Celeron (CopperMine and Tualatin) and VIA C3 CPU with FSB up to 133MHz
- **CPU Socket:** Intel FC-370, Socket 370
- **BIOS:** Award 2Mbit Flash BIOS
- **Chipset:** VIA VT8602 / VT82C686B
- **I/O Chipset:** VT82C686B
- **Memory:** Onboard two 168-pin DIMM socket supports up to 1 Gbytes SDRAM
- **Watchdog Timer:** Can generate a system reset, IRQ15 or NMI. Software selectable time out interval (2 sec. ~ 255 sec., 1 sec./step)

I/O Interface

- **Multi I/O:** EIDE x 2 (UDMA 100), FDD x 1, K/B x 1, Mouse x 1, RS-232 x 1, RS-232/422/485 x 1, LPT x 1
- **IrDA:** 115kbps, IrDA 1.0 compliant
- **USB:** USB port x 2, USB 2.0 x 4 (5 x 2 header)

Ethernet Interface

- **Chipset:** Dual Realtek 8100B or Intel 82559/82559ER PCI-bus Ethernet controllers onboard
- **Ethernet Interface:** PCI 100/10 Mbps, IEEE 802.3U compatible

Video Interface

- **Chipset:** VIA VT8602, high performance 64-bit GUI, 3D engine
- **Memory:** 2/ 4 /8 MB frame buffer using system memory

Resolution: Display mode:

LCD panel supports up to 1280 x 1024 @ 24 bpp

CRT displays support up to 1280 x 1024 @ 24 bpp

Optional TV Output Interface

TV Encoder: VIA VT1621

TV output interface: Supports both RCA jack and S terminal

SSD Interface

One 32-pin DIP socket supports M-Systems DiskOnChip 2000 series up to 1 G Bytes

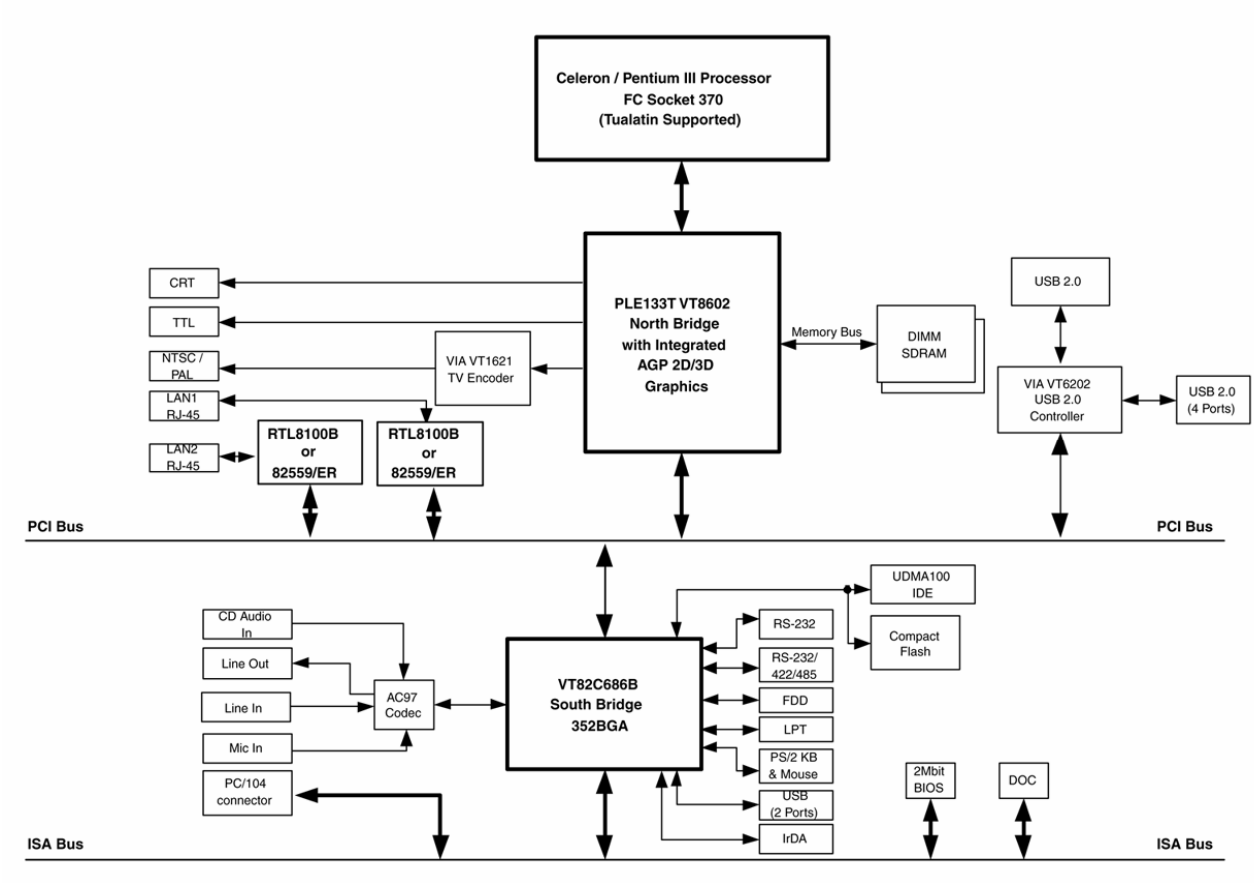
Compact Flash: One CF socket supports Type I / II Compact Flash Card

Mechanical and Environmental

- **Power Supply Voltage:** ATX type, +5V and +12V
- **Operating Temperature:** 0 to 60° C (32 to 140° F)
- **Board Size:** 13.3"(L) x 4.8"(W) (338 mm x 122 mm)
- **Weight:** 0.6 Kg

2.3 Architecture Overview

The following block diagram shows the architecture and main components of ECB-862.



The two key components on board are the VIA VT8602 North Bridge and VT82C686B super South Bridge. These two devices provide the ISA and PCI bus to which all the major components are attached.

The following sections provide detail information about the functions provided onboard.

2.3.1 VIA VT8602 North Bridge

The Apollo PLE133T Graphics Controller is a highly integrated display control device that incorporates a 64-bit 3D/2D graphic engine and video accelerator with advanced DVD video and optional TV output capability. It provides a flexible and high performance solution for graphics and video playback acceleration for various color depth and resolution modes. The Apollo PLE133T Graphics Controller supports a video capture port to import captured live MPEG 1 or MPEG 2 video streams, or DVD decompressed video streams to be overlaid with a graphics stream of mixed color depth displays. In supporting dual live videos, the Apollo PLE133T Graphics Controller offers independent dual video windows ready for videoconferencing and with linear scaling capability. Integrating the programmable phase lock loop with high speed LUT DACs, the Apollo PLE133T Graphics Controller is a true price/performance solution for the modern multimedia based entertainment PC.

The Apollo PLE133T Graphics Controller's main system features include:

- High Performance single cycle GUI
- Highly Integrated RAMDAC™ and Triple Clock Synthesizer
- Full Feature High Performance 3D Graphics Engine
- High speed internal AGP Bus Mastering data bus supporting DVD video playback & 3D
- Hardware implementation of motion compensation
- Dual Video Windows for Videoconferencing
- TrueVideo. Processor
- DirectDrawTM and DirectVideoTM Hardware Support
- Versatile Motion Video Capture/Overlay/Playback Support
- Flexible Frame Buffer Memory Interface
- Advanced Mobile Power Management
- CRT Power Management (VESA™ DPMS)
- PC99 Hardware Support

2.3.2 Advanced High-Performance DRAM Controller

- DRAM interface synchronous or pseudosynchronous with CPU FSB speed of 133 / 100 / 66 MHz
- DRAM interface may be faster than CPU by 33 MHz to allow use of PC133 with 100 MHz VIA C3, Pentium III or Pentium III-M (Tualatin) CPUs or use of PC100 with 66 MHz Celeron CPU
- DRAM interface may be slower than CPU by 33 MHz to allow use of older memory modules with a newer CPU
- Concurrent CPU, AGP, and PCI access
- Different DRAM timing for each bank
- Dynamic Clock Enable (CKE) control for SDRAM power reduction in high speed systems
- Mixed 1M / 2M / 4M / 8M / 16M / 32MxN DRAMs
- 6 banks DRAMs supported (3 modules) up to 1.5 GB (256Mb DRAM technology)
- Flexible row and column addresses
- 64-bit data width only
- 3.3V DRAM interface with 5V-tolerant inputs
- Programmable I/O drive capability for MA, command, and MD signals
- Two-bank interleaving for 16Mbit SDRAM support
- Two-bank and four bank interleaving for 64Mbit SDRAM support
- Supports maximum 8-bank interleave (i.e., 8 pages open simultaneously); banks are allocated based on LRU
- Independent SDRAM control for each bank
- Seamless DRAM command scheduling for maximum DRAM bus utilization
- Four cache lines (16 quadwords) of CPU to DRAM write
- Four cache lines of CPU to DRAM read prefetch buffers
- Read around write capability for non-stalled CPU read
- Speculative DRAM read before snoop result
- Burst read and write operation
- x-1-1-1-1-1-1-1 back-to-back accesses for SDRAM from CPU or from DRAM controller

- BIOS shadow at 16KB increment
- Decoupled and burst DRAM refresh with staggered RAS timing
- CAS before RAS or self refresh

2.3.3 VIA VT82C686B South Bridge

The VT82C686B PSIPC (PCI Super-I/O Integrated Peripheral Controller) is a high integration, high performance, power-efficient, and high compatibility device that supports Intel and non-Intel based processor to PCI bus bridge functionality to make a complete

Microsoft PC99-compliant PCI/ISA system. In addition to complete ISA extension bus functionality, the VT82C686B includes standard intelligent peripheral controllers:

- Master mode enhanced IDE controller with dual channel DMA engine and interlaced dual channel commands. Dedicated FIFO coupled with scatter and gather master mode operation allows high performance transfers between PCI and IDE devices. In addition to standard PIO and DMA mode operation. The VT82C686B also supports the UltraDMA-33, UltraDMA-66, and UltraDMA-100 (ATA-100) standards. The IDE controller is SFF-8038I v1.0 and Microsoft Windows-family compliant.
- Universal Serial Bus controller that is USB v1.1 and Universal HCI v1.1 compliant. The VT82C686B includes the root hub with four function ports with integrated physical layer transceivers. The USB controller allows hot plug and play and isochronous peripherals to be inserted into the system with universal driver support. The controller also implements legacy keyboard and mouse support so that legacy software can run transparently in a non-USB-aware operating system environment.
- Keyboard controller with PS2 mouse support.
- Real Time Clock with 256 byte extended CMOS. In addition to the standard ISA RTC functionality, the integrated RTC also includes the date alarm, century field, and other enhancements for compatibility with the ACPI standard.
- Notebook-class power management functionality compliant with ACPI and legacy APM requirements. Multiple sleep states (power-on suspend, suspend-to-DRAM, and suspend-to-Disk) are supported with hardware automatic wake-up. Additional functionality includes event monitoring, CPU clock throttling and stop (Intel processor protocol), PCI bus clock stop control, modular power, clock and leakage control, hardware-based and software-based event handling, general purpose I/O, chip select and external SMI.
- Hardware monitoring subsystem for managing system / motherboard voltage levels, temperatures, and fan speeds
- Full System Management Bus (SMBus) interface.
- Two 16550-compatible serial I/O ports with infrared communications port option on the second port.

- Integrated PCI-mastering dual full-duplex direct-sound AC97-link-compatible sound system. Hardware soundblaster-pro and hardware-assisted FM blocks are included for Windows DOS box and real-mode DOS compatibility. Loopback capability is also implemented for directing mixed audio streams into USB and 1394 speakers for high quality digital audio.
- Two game ports and one MIDI port
- ECP/EPP-capable parallel port
- Standard floppy disk drive interface
- Distributed DMA capability for support of ISA legacy DMA over the PCI bus. Serial IRQ is also supported for docking and non-docking applications.
- Plug and Play controller that allows complete steerability of all PCI interrupts and internal interrupts / DMA channels to any interrupt channel. One additional steerable interrupt channel is provided to allow plug and play and reconfigurability of on-board peripherals for Windows family compliance.
- Internal I/O APIC (Advanced Programmable Interrupt Controller)

2.3.4 Current PCI Bus Controller

- PCI bus is synchronous / pseudo-synchronous to host CPU bus
- 33 MHz operation on the primary PCI bus
- Supports up to five PCI masters
- Peer concurrency
- Concurrent multiple PCI master transactions; i.e., allow PCI masters from both PCI buses active at the same time
- Zero wait state PCI master and slave burst transfer rate
- PCI to system memory data streaming up to 132Mbyte/sec
- PCI master snoop ahead and snoop filtering
- Six levels (double-words) of CPU to PCI posted write buffers
- Byte merging in the write buffers to reduce the number of PCI cycles and to create further PCI bursting possibilities
- Enhanced PCI command optimization (MRL, MRM, MWI, etc.)
- Forty-eight levels (double-words) of post write buffers from PCI masters to DRAM
- Sixteen levels (double-words) of prefetch buffers from DRAM for access by PCI masters
- Supports L1/L2 write-back forward to PCI master read to minimize PCI read latency

- Supports L1/L2 write-back merged with PCI master post-write to minimize DRAM utilization
- Delay transaction from PCI master reading DRAM
- Read caching for PCI master reading DRAM
- Transaction timer for fair arbitration between PCI masters (granularity of two PCI clocks)
- Symmetric arbitration between Host/PCI bus for optimized system performance
- Complete steerable PCI interrupts
- PCI-2.2 compliant, 32 bit 3.3V PCI interface with 5V tolerant inputs

2.3.5 IDE Interface (Bus Master Capability and Synchronous DMA Mode)

Master mode enhanced IDE controller with dual channel DMA engine and interlaced dual channel commands. Dedicated FIFO coupled with scatter and gather master mode operation allows high performance transfers between PCI and IDE devices. In addition to standard PIO and DMA mode operation. The VT82C686B also supports the UltraDMA-33, UltraDMA-66, and UltraDMA-100 (ATA-100) standards. The IDE controller is SFF-8038I v1.0 and Microsoft Windows-family compliant.

2.3.6 USB

Universal Serial Bus controller that is USB v1.1 and Universal HCI v1.1 compliant. The VT82C686B includes the root hub with four function ports with integrated physical layer transceivers. The USB controller allows hot plug and play and isochronous peripherals to be inserted into the system with universal driver support. The controller also implements legacy keyboard and mouse support so that legacy software can run transparently in a non-USB-aware operating system environment.

2.3.7 VIA VT6202 PCI USB2.0 Controller

The VT6202 USB 2.0 UHCI and EHCI Host Controller for the PCI Bus provides higher bandwidth (480 Mbps) and is backward compatible with USB 1.1. It implements Universal Serial Bus Specification Revision 2.0 and is compliant with UHCI 1.1 and EHCI 0.95 with a 32-bit PCI host bus interface.
The VT6202 supports 4 downstream facing ports with 1.5 (low-speed), 12 (full-speed) and 480 (high-speed) Mbps transaction capability. The Root Hub is integrated with physical-layer transceivers shared by UHCI (for full/low-speed) and EHCI (for highspeed)
Host Controllers. The VT6202 also supports PCI-Bus Power Management Interface Specification 1.1 and has legacy support for all downstream facing ports.
The VT6202 is ready to provide a PCI 4-port USB2.0 peripheral-interface to satisfy the needs of desktops, mobile systems, and other host platforms. Support for the VT6202 is built into Microsoft Windows XP and Windows 2000.

2.3.8 Ethernet

2.3.8.1 Realtek RTL8100B Ethernet Controller

The Realtek RTL8100B is one of the Realtek RTL8139A/B/C/8130 family, the highly integrated and cost-effective single-chip Fast Ethernet controller that provides 32-bit performance, PCI bus master capability, and full compliance with IEEE 802.3u 100Base-T specifications and IEEE 802.3x Full Duplex Flow Control. It also supports Advanced Configuration Power management Interface (ACPI), PCI power management for modern operating systems that is capable of Operating System Directed Power Management (OSPM) to achieve the most efficient power management.

2.3.8.2 Intel 82559ER Ethernet Controller (Optional)

The 82559ER is part of Intel's second generation family of fully integrated 10BASE-T/100BASE-TX LAN solutions. The 82559ER consists of both the Media Access Controller (MAC) and the physical layer (PHY) combined into a single component solution. 82559 family members build on the basic functionality of the 82558 and contain power management enhancements.

The 82559ER is a 32-bit PCI controller that features enhanced scatter-gather bus mastering capabilities which enables the 82559ER to perform high-speed data transfers over the PCI bus. The 82559ER bus master capabilities enable the component to process high-level commands and perform multiple operations, thereby off-loading communication tasks from the system CPU. Two large transmit and receive FIFOs of 3 Kbytes each help prevent data underruns and overruns, allowing the 82559ER to transmit data with minimum interframe spacing (IFS).

The 82559ER can operate in either full duplex or half duplex mode. In full duplex mode the 82559ER adheres to the IEEE 802.3x Flow Control specification. Half duplex performance is enhanced by a proprietary collision reduction mechanism.

The 82559ER includes a simple PHY interface to the wire transformer at rates of 10BASE-T and 100BASE-TX, and Auto-Negotiation capability for speed, duplex, and flow control. These features and others reduce cost, real estate, and design complexity.

The 82559ER also includes an interface to a serial (4-pin) EEPROM and a parallel interface to a 128 Kbyte Flash memory. The EEPROM provides power-on initialization for hardware and software configuration parameters.

2.3.9 M-Systems DiskOnChip

M-Systems' DiskOnChip 2000 is a high performance single-chip flash disk in a standard 32-pin DIP package. This unique data storage solution offers cost effective data storage beyond that of traditional hard disks. Perfect for applications with limited space and varying capacity requirements. The DiskOnChip 2000 is simply inserted into a 32-pin DIP socket on your platform board and you have a bootable flash disk.

2.3.10 Compact Flash Interface

A Compact Flash type II connector is connected to the secondary IDE controller. The Compact Flash storage card is IDE compatible. It is an ideal replacement for standard IDE hard drives. The solid-state design offers no seek errors even under extreme shock and vibration conditions. The Compact Flash storage card is extremely small and highly suitable for rugged environments, thus providing an excellent solution for mobile applications with space limitations. It is fully compatible with all consumer applications designed for data storage PC card, PDA, and Smart Cellular Phones, allowing simple use for the end user. The Compact Flash storage card is O/S independent, thus offering an optimal solution for embedded systems operating in non-standard computing environments. The Compact Flash storage card is IDE compatible and offers various capacities.

3. Hardware Configuration

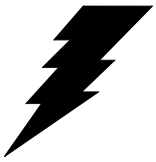
This chapter explains you the instructions of how to set up your system. The additional information shows you how to install M-Systems' DiskOnChip and program the Watchdog Timer.

3.1 Installation Procedure

1. Turn off the power supply.
2. Insert the DIMM module (be careful with the orientation).
3. Insert all external cables for hard disk, floppy, keyboard, mouse, USB etc. except for flat panel. A CRT monitor must be connected in order to change CMOS settings to support flat panel.
4. Connect power supply to the board via the PWR1.
5. Turn on the power.
6. Enter the BIOS setup by pressing the delete key during boot up. Use the "Auto Configuration with Optimal Settings" feature. The ***Peripheral Setup*** and the ***Standard CMOS Setup*** Window must be entered and configured correctly to match the particular system configuration.
7. If TFT panel display is to be utilised, make sure the panel voltage is correctly set before connecting the display cable and turning on the power.

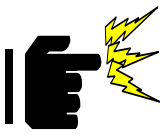
3.2 Safety Precautions

3.2.1 Warning!



Always completely disconnect the power cord from your chassis or power cable from your board whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

3.2.2 Caution!



Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

3.3 Socket 370 Processor

3.3.1 Installing Pentium III / Celeron CPU

- Lift the handling lever of CPU socket outwards and upwards to the other end.
- Align the processor pins with pin holes on the socket. Make sure that the notched corner or dot mark (pin 1) of the CPU corresponds to the socket's bevel end. Then press the CPU gently until it fits into place. If this operation is not easy or smooth, don't do it forcibly. You need to check and rebuild the CPU pin uniformly.
- Push down the lever to lock processor chip into the socket.
- Follow the installation guide of cooling fan or heat sink to mount it on CPU surface and lock it on the socket 370.
- Make sure to follow particular CPU speed and voltage type to adjust the jumper settings properly.

3.3.2 Removing CPU

- Unlock the cooling fan first.
- Lift the lever of CPU socket outwards and upwards to the other end.
- Carefully lift up the existing CPU to remove it from the socket.
- Follow the steps of installing a CPU to change to another one or place handling bar back to close the opened socket.

3.4 Main Memory

ECB-862 provides two SDRAM socket (168-pin Dual In-line Memory Module) to support 3.3V SDRAM. The maximum memory size is 512MB. If 133MHz FSB CPU is adopted, you have to use PC-133 compliant SDRAM. For system compatibility and stability, please do not use memory module without brand.

Watch out the contact and lock integrity of memory module with socket, it will influence the system's reliability. Follow the normal procedure to install your SDRAM module into the DIMM socket. Before locking the DIMM module, make sure that the memory module has been completely inserted into the DIMM socket.

Note:

Please do not change any SDRAM parameter in BIOS setup to increase your system's performance without acquiring technical information in advance.

3.5 M-Systems' DiskOnChip Flash Disk

ECB-862 reserves a 32-pin DIP socket to support M-Systems' DiskOnChip flash disk up to 1 GB. The DiskOnChip is based on pure ISA bus and without PnP (Plug and Play) function. Before the installation, make sure that the DiskOnChip I/O address jumper is set properly to prevent the I/O resource conflict.

3.5.1 Installing DOC

Align the DOC with the pinholes on the socket. Make sure that the notched corner or dot mark (pin 1) of DOC corresponds to notched corner of the socket. Then press the DOC gently until it fits into place. If installation procedure is correct, the flash disk can be viewed as a normal hard disk to access read/write data now.

Note:

Please make sure that your DOC is properly inserted. Place the DOC in wrong direction will damage the flash device.

If you system would like to boot from the flash disk, it is recommended to refer to the application note provided by M-Systems first. You can easily obtain the application note from M-Systems' DiskOnChip user's manual or from their web site as below.

http://www.m-sys.com

3.6 Installing the Single Board Computer

To install your ECB-862 into chassis or proprietary environment, the following steps have to be followed.

- Make sure all jumpers are properly set.
- Install and configure CPU and memory module correctly.
- Place the ECB-862 into the dedicated position in your system.
- Attach cables to peripherals.

Note:

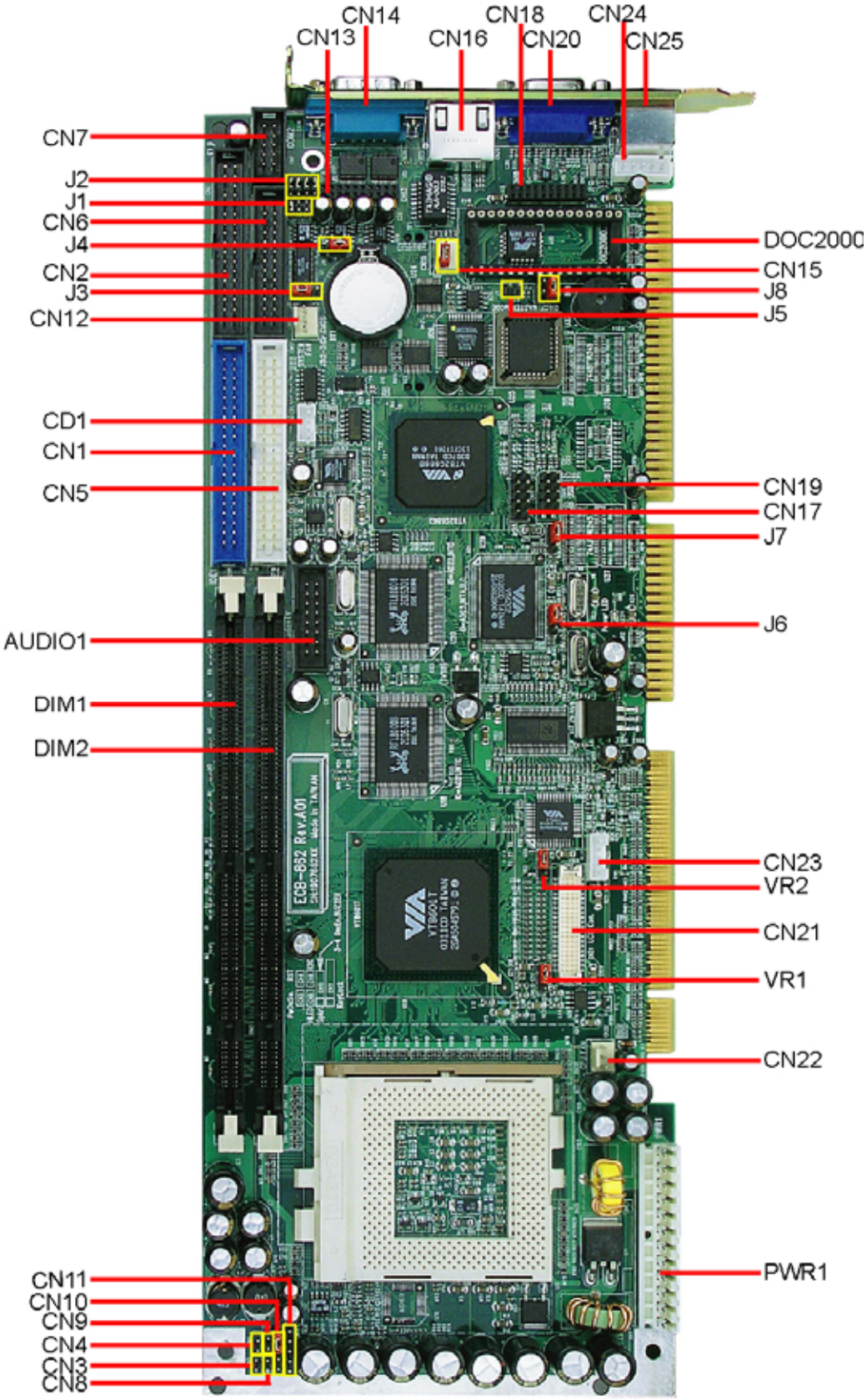
Please ensure that your SBC is properly installed and fixed by mechanism. Otherwise, the system might be unstable or do not work due to bad contact of golden finger and slot.

3.6.1 Drivers Support

ECB-862 provides on CD-Title to support on-board VGA and Ethernet device drivers in various operating systems. Before installing the device drivers, please see the reference files in each sub-directory. You cannot install drivers from CD-Title directly.

3.7 Jumper & Connector

3.7.1 Jumper & Connector Layout



3.7.2 Jumper & Connector List

Connectors on the board are linked to external devices such as hard disk drives, keyboard, mouse, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

The following tables list the function of each of the board's jumpers and connectors.

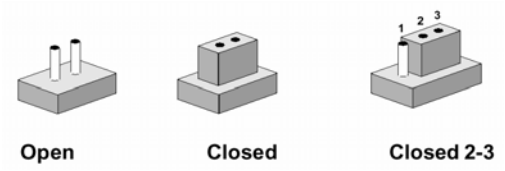
Jumpers		
Label	**Function**	**Note**
CN10	External speaker select	4 x 1 header, pitch 2.54mm
J1, J2	COM2 RS-232/422/485 select	4 x 3 header, pitch 2.0mm (J2) 3 x 2 header, pitch 2.0mm
J3	Clear CMOS	3 x 1 header, pitch 2.54mm
J4	Reserve for internal test only	3 x 1 header, pitch 2.54mm
J5	Compact Flash mode select	2 x 1 header, pitch 2.54mm
J6	Reserve for internal test only	3 x 1 header, pitch 2.54mm
J7	Reserve for internal test only	3 x 1 header, pitch 2.54mm
J8	M-Systems DiskOnChip memory address select	2 x 2 header, pitch 2.54mm

Connectors		
Label	**Function**	**Note**
AUDIO1	Audio / TV output connector	8 x 2 box header, pitch 2.54mm
CD1	CD-ROM audio input connector	4 x 1 wafer, pitch 2.0mm
CN1	Primary IDE connector	20 x 2 box header, pitch 2.54mm
CN2	Floppy connector	17 x 2 box header, pitch 2.54mm
CN3	Power on connector	2 x 1 header, pitch 2.54mm
CN4	Reset connector	2 x 1 header, pitch 2.54mm
CN5	Secondary IDE connector	20 x 2 box header, pitch 2.54mm
CN6	Parallel port connector	13 x 2 box header, pitch 2.54mm
CN7	Serial port 2 connector	5 x 2 box header, pitch 2.54mm
CN8	HD LED	2 x 1 header, pitch 2.54mm
CN9	Reserve for internal test only	2 x 1 header, pitch 2.54mm
CN11	Power led & key lock connector	5 x 1 header, pitch 2.54mm
CN12	System fan connector	3 x 1 wafer, pitch 2.54mm
CN13	Daughter board connector A	
CN14	Serial port 1 connector	D-sub 9-pin male connector
CN15	Auxiliary power connector	3 x 1 wafer, pitch 2.54mm
CN16	10/100 Base-Tx Ethernet connector	RJ-45
CN17	IrDA connector	5 x 2 header, pitch 2.54mm
CN18	Daughter board connector B	
CN19	USB connector	5 x 2 header, pitch 2.54mm
CN20	VGA connector	D-sub 15-pin female connector
CN21	LCD panel connector	HIROSE DF13-40DP-1.25V
CN22	CPU fan connector	3 x 1 wafer, pitch 2.54mm
CN23	LCD inverter connector	5 x 1 wafer, pitch 2.0mm
CN24	Internal keyboard connector	5 x 1 wafer, pitch 2.54mm
CN25	PS/2 keyboard & mouse connector	6-pin mini DIN
DOC2000	M-Systems DOC 2000 socket	16 x 2 DIP socket
DIM1,2	168-pin SDRAM DIMM socket	
PWR1	Power connector	
VR1	LCD contrast adjustment connector	3 x 1 header, pitch 2.54mm
VR2	LCD Backlight brightness adjustment connector	3 x 1 header, pitch 2.54mm

3.8 Setting Jumpers

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



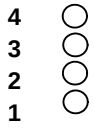
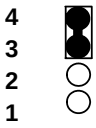
The jumper settings are schematically depicted in this manual as follows:

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

3.8.1 External Speaker Select (CN10)

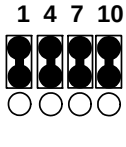
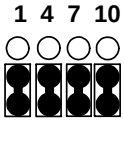
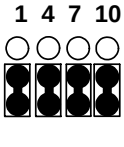
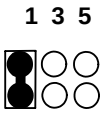
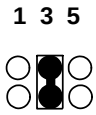
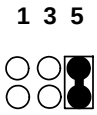
CN10 is a 4-pin connector for an external speaker. If there is no external speaker, the ECB-862 provides an onboard buzzer as an alternative. To enable the buzzer, set pin 3-4 as closed.

External Speaker Select (CN10)		
	External speaker	Onboard buzzer*
CN10		

* default

3.8.2 COM2 RS-232/422/485 Select (J2, J1)

The ECB-862 series COM2 serial port can be selected as RS-232, RS-422, or RS-485 by setting J2 & J1.

COM2 Select (J1, J2)			
	RS-232*	RS-422	RS-485
J2			
J1			

* default

3.8.3 Clear CMOS (J3)

You can use J3 to clear the CMOS data if necessary. To reset the CMOS data, set J3 to 2-3 closed for just a few seconds, and then remove the jumper back to 1-2 closed.

Clear CMOS (J3)		
	Protect*	Clear CMOS
J3		

* default

3.8.4 Compact Flash Mode Select (J5)

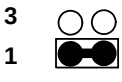
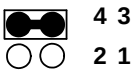
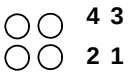
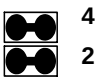
You can use J5 to configure the Compact Flash device to be Master or Slave mode on the secondary IDE channel.

Compact Flash Mode Select (J5)		
	Master*	Slave
J5		

* default

3.8.5 M-Systems DiskOnChip Memory Address Select (J8)

The M-systems DiskOnChip memory address can be selected by J8. The choice is D0000~D1FFF, D4000~D5FFF, D8000~D9FFF, or Disabled.

M-systems DiskOnChip Memory Address Select (J8)				
	D0000*	D4000	D8000	Disabled
				

* default

3.9 Connector Definitions

3.9.1 Audio / TV Output Connector (AUDIO1)

Signal	PIN		Signal
Mic	1	2	Mic Bias
AGND	3	4	AGND
Line-Out L	5	6	Line-Out R
SPK L	7	8	SPK R
Line-In L	9	10	Line-In R
AGND	11	12	Yout
GND	13	14	Cout
GND	15	16	COMP

3.9.2 CD-ROM Audio Input Connector (CD1)

Signal	PIN
CD_GND	1
CD_L	2
CD_GND	3
CD_R	4

3.9.3 Primary IDE Connector (CN1)

Signal	PIN		Signal
RESET#	1	2	GND
PDD7	3	4	PDD8
PDD6	5	6	PDD9
PDD5	7	8	PDD10
PDD4	9	10	PDD11
PDD3	11	12	PDD12
PDD2	13	14	PDD13
PDD1	15	16	PDD14
PDD0	17	18	PDD15
GND	19	20	NC
PDDREQ	21	22	GND
PDIOW#	23	24	GND
PDIOR#	25	26	GND
PDIORDY	27	28	IDESEL
PDDACK#	29	30	GND
IRQ14	31	32	NC
PDA1	33	34	CBLID
PDA0	35	36	PDA2
CS0	37	38	CS1
PDDACT#	39	40	GND

3.9.4 Secondary IDE Connector (CN5)

Signal	PIN		Signal
RESET#	1	2	GND
SDD7	3	4	SDD8
SDD6	5	6	SDD9
SDD5	7	8	SDD10
SDD4	9	10	SDD11
SDD3	11	12	SDD12
SDD2	13	14	SDD13
SDD1	15	16	SDD14
SDD0	17	18	SDD15
GND	19	20	NC
SDDREQ	21	22	GND
SDIOW#	23	24	GND
SDIOR#	25	26	GND
SDIORDY	27	28	IDESEL
SDDACK#	29	30	GND
IRQ15	31	32	NC
SDA1	33	34	CBLID
SDA0	35	36	SDA2
CS0	37	38	CS1
SDDACT#	39	40	GND

3.9.5 Signal Description – Primary & Secondary IDE Connector (CN1, CN5)

PDA [2:0]	**Primary Disk Address [2:0].** These signals indicate which byte in either the ATA command block or control block is being addressed. If the IDE signals are configured for Primary and Secondary, these signals are connected to the corresponding signals on the Primary IDE connector. If the IDE signals are configured for Primary 0 and Primary 1, these signals are used for the Primary 0 connector.
SDA [2:0]	**Secondary Disk Address [2:0].** These signals indicate which byte in either the ATA command block or control block is being addressed. If the IDE signals are configured for Primary and Secondary, these signals are connected to the corresponding signals on the Secondary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, these signals are used for the Primary Slave connector.
PDCS1#	**Primary Disk Chip Select for 1F0H~1F7H Range.** For ATA command register block. If the IDE signals are configured for Primary and Secondary, this output signal is connected to the corresponding signal on the Primary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, this signal is used for the Primary Master connector.
PDCS3#	**Primary Disk Chip Select for 3F0H~3F7H Range.** For ATA control register block. If the IDE signals are configured for Primary and Secondary, this output signal is connected to the corresponding signal on the Primary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, this signal is used for the Primary Master connector.
SDCS1#	**Secondary Chip Select for 170H~177H Range.** For ATA command register block. If the IDE signals are configured for Primary and Secondary, this output signal is connected to the corresponding signal on the Secondary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, these signals are used for the Primary Slave connector.
SDCS3#	**Secondary Chip Select for 370H~377H Range.** For ATA control register block. If the IDE signals are configured for Primary and Secondary, this output signal is connected to the corresponding signal on the Secondary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, these signals are used for the Primary Slave connector.
PDD [15:0]	**Primary Disk Data [15:0].** These signals are used to transfer data to or from the IDE device. If the IDE signals are configured for Primary and Secondary, these signals are connected to the corresponding signals on the Primary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, this signal is used for the Primary Master connector.
SDD [15:0]	**Secondary Disk Data [15:0].** These signals are used to transfer data to or from the IDE device. If the IDE signals are configured for Primary and Secondary, these signals are connected to the corresponding signals on the Secondary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, these signals are used for the Primary Slave connector.

PDIOR#	**Primary Disk IO Read.** In normal IDE this is the command to the IDE device that it may drive data onto the PDD [15:0] lines. Data is latched by PIIX4 on the negation edge of PDIOR#. The IDE device is selected either by the ATA register file chip selects (PDCS1#, PDCS3#) and the PDA [2:0] lines, or the IDE DMA slave arbitration signals (PDDACK#). In an Ultra DMA/33 read cycle, this signal is used as DMARDY# which is negated by the PIIX4 to pause Ultra DMA/33 transfers. In an Ultra DMA/33 write cycle, this signal is used as the STROBE signal, with the drive latching data on rising and falling edges of STROBE. If the IDE signals are configured for Primary and Secondary, this signal is connected to the corresponding signal on the Primary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, this signal is used for the Primary Master connector.
SDIOR#	**Secondary Disk IO Read.** In normal IDE mode, this is the command to the IDE device that it may drive data onto the SDD [15:0] lines. Data is latched by the PIIX4 on the negation edge of SDIOR#. The IDE device is selected either by the ATA register file chip selects (SDCS1#, SDCS3#) and the SDA [2:0] lines, or the IDE DMA slave arbitration signals (SDDACK#). In an Ultra DMA/33 read cycle, this signal is used as DMARDY# which is negated by the PIIX4 to pause Ultra DMA/33 transfers. In an Ultra DMA/33 write cycle, this signal is used as the STROBE signal, with the drive latching data on rising and falling edges of STROBE. If the IDE signals are configured for Primary and Secondary, this signal is connected to the corresponding signal on the Secondary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, these signals are used for the Primary Slave connector.
PDIOW#	**Primary Disk IO Write.** In normal IDE mode, this is the command to the IDE device that it may latch data from the PDD [15:0] lines. Data is latched by the IDE device on the negation edge of PDIOW#. The IDE device is selected either by the ATA register file chip selects (PDCS1#, PDCS3#) and the PDA [2:0] lines, or the IDE DMA slave arbitration signals (PDDACK#). For Ultra DMA/33 mode, this signal is used as the STOP signal, which is used to terminate an Ultra DMA/33 transaction. If the IDE signals are configured for Primary and Secondary, this signal is connected to the corresponding signal on the Primary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, this signal is used for the Primary Master connector.
SDIOW#	**Secondary Disk IO Write.** In normal IDE mode, this is the command to the IDE device that it may latch data from the SDD [15:0] lines. Data is latched by the IDE device on the negation edge of SDIOW#. The IDE device is selected either by the ATA register file chip selects (SDCS1#, SDCS3#) and the SDA [2:0] lines, or the IDE DMA slave arbitration signals (SDDACK#). In read and write cycles this signal is used as the STOP signal, which is used to terminate an Ultra DMA/33 transaction. If the IDE signals are configured for Primary and Secondary, this signal is connected to the corresponding signal on the Secondary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, these signals are used for the Primary Slave connector.

PDIORDY	**Primary IO Channel Ready.** In normal IDE mode, this input signal is directly driven by the corresponding IDE device IORDY signal. In an Ultra DMA/33 read cycle, this signal is used as STROBE, with the PIIX4 latching data on rising and falling edges of STROBE. In an Ultra DMA/33 write cycle, this signal is used as the DMARDY# signal which is negated by the drive to pause Ultra DMA/33 transfers. If the IDE signals are configured for Primary and Secondary, this signal is connected to the corresponding signal on the Primary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, this signal is used for the Primary Master connector. This is a Schmitt triggered input.
SDIORDY	**Secondary IO Channel Ready.** In normal IDE mode, this input signal is directly driven by the corresponding IDE device IORDY signal. In an Ultra DMA/33 read cycle, this signal is used as STROBE, with the PIIX4 latching data on rising and falling edges of STROBE. In an Ultra DMA write cycle, this signal is used as the DMARDY# signal which is negated by the drive to pause Ultra DMA/33 transfers. If the IDE signals are configured for Primary and Secondary, this signal is connected to the corresponding signal on the Secondary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, these signals are used for the Primary Slave connector. This is a Schmitt triggered input.
PDDREQ	**Primary Disk DMA Request.** This input signal is directly driven from the IDE device DMARQ signal. It is asserted by the IDE device to request a data transfer, and used in conjunction with the PCI bus master IDE function. It is not associated with any AT compatible DMA channel. If the IDE signals are configured for Primary and Secondary, this signal is connected to the corresponding signal on the Primary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, this signal is used for the Primary Master connector.
SDDREQ	**Secondary Disk DMA Request.** This input signal is directly driven from the IDE device DMARQ signal. It is asserted by the IDE device to request a data transfer, and used in conjunction with the PCI bus master IDE function. It is not associated with any AT compatible DMA channel. If the IDE signals are configured for Primary and Secondary, this signal is connected to the corresponding signal on the Secondary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, these signals are used for the Primary Slave connector.
PDDACK#	**Primary DMA Acknowledge.** This signal directly drives the IDE device DMACK# signal. It is asserted by PIIX4 to indicate to IDE DMA slave devices that a given data transfer cycle (assertion of PDIOR# or PDIOW#) is a DMA data transfer cycle. This signal is used in conjunction with the PCI bus master IDE function. It is not associated with any AT compatible DMA channel. If the IDE signals are configured for Primary and Secondary, this signal is connected to the corresponding signal on the Primary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, this signal is used for the Primary Master connector.

SDDACK#	**Secondary DMA Acknowledge.** This signal directly drives the IDE device DMACK# signal. It is asserted by PIIX4 to indicate to IDE DMA slave devices that a given data transfer cycle (assertion of SDIOR# or SDIOW#) is a DMA data transfer cycle. This signal is used in conjunction with the PCI bus master IDE function. It is not associated with any AT compatible DMA channel. If the IDE signals are configured for Primary and Secondary, this signal is connected to the corresponding signal on the Secondary IDE connector. If the IDE signals are configured for Primary Master and Primary Slave, these signals are used for the Primary Slave connector.
PDDACT#	**Primary Disk Act.** Signal from Primary IDE device indicating Primary IDE device activity. The signal level depends on the hard disk type, normally active low.
SDDACT#	**Secondary Disk Act.** Signal from Secondary IDE device indicating Secondary IDE device activity. The signal level depends on the hard disk type, normally active low.
RESET#	IDE Reset. This signal resets all the devices that are attached to the IDE interface.
IRQ14/15	Interrupt line from hard disk. Connected directly to PC-AT bus.

3.9.6 Floppy Connector (CN2)

Signal	PIN		Signal
GND	1	2	RWC#
GND	3	4	NC
NC	5	6	DRVDEN1#
GND	7	8	INDEX#
GND	9	10	MOA#
GND	11	12	DSB#
GND	13	14	DSA#
GND	15	16	MOB#
GND	17	18	DIR#
GND	19	20	STEP#
GND	21	22	WD#
GND	23	24	WE#
GND	25	26	TRAK0#
GND	27	28	WPT#
GND	29	30	RDATA#
GND	31	32	SIDE1#
GND	33	34	DSKCHG#

3.9.7 Signal Description – Floppy Connector (CN2)

RDATA#	The read data input signal from the FDD.
WD#	Write data. This logic low open drain writes pre-compensation serial data to the selected FDD. An open drain output.
WE#	Write enable. An open drain output.
MOA#	Motor A On. When set to 0, this pin enables disk drive 0. This is an open drain output.
MOB#	Motor B On. When set to 0, this pin enables disk drive 1. This is an open drain output.
DSA#	Drive Select A. When set to 0, this pin enables disk drive A. This is an open drain output.
DSB#	Drive Select B. When set to 0, this pin enables disk drive B. This is an open drain output.
SIDE1#	This output signal selects side of the disk in the selected drive.
DIR#	Direction of the head step motor. An open drain output Logic 1 = outward motion Logic 0 = inward motion
STEP#	Step output pulses. This active low open drain output produces a pulse to move the head to another track.
DRVDEN0#	This output indicates whether a low drive density (250/300kbps at low level) or a high drive density (500/1000kbps at high level) has been selected.
TRAK0#	Track 0. This Schmitt-triggered input from the disk drive is active low when the head is positioned over the outermost track.
INDEX#	This Schmitt-triggered input from the disk drive is active low when the head is positioned over the beginning of a track marked by an index hole.
WP#	Write protected. This active low Schmitt input from the disk drive indicates that the diskette is write-protected.
DSKCHG#	Diskette change. This signal is active low at power on and whenever the diskette is removed.

3.9.8 Power On Connector (CN3)

SIGNAL	PIN
GND	2
PWRBTN	1

3.9.9 Reset Connector (CN4)

SIGNAL	PIN
GND	2
RSTIN	1

3.9.10 Parallel Port Connector (CN6)

Signal	PIN		Signal
STB#	1	2	AFD#
PD0	3	4	ERR#
PD1	5	6	INIT#
PD2	7	8	SLIN#
PD3	9	10	GND
PD4	11	12	GND
PD5	13	14	GND
PD6	15	16	GND
PD7	17	18	GND
ACK#	19	20	GND
BUSY	21	22	GND
PE	23	24	GND
SLCT	25	26	NC

3.9.11 Signal Description – Parallel Port Connector (CN6)

PD [7:0]	Parallel data bus from PC board to printer. The data lines are able to operate in PS/2 compatible bi-directional mode.
SLIN#	Output line for detection of printer selection. This pin is pulled high internally.
SLCT	An active high input on this pin indicates that the printer is selected. This pin is pulled high internally.
STB#	An active low output is used to latch the parallel data into the printer. This pin is pulled high internally.
BUSY	An active high input indicates that the printer is not ready to receive data. This pin is pulled high internally.
ACK#	An active low input on this pin indicates that the printer has received data and is ready to accept more data. This pin is pulled high internally.
INIT#	Output line for the printer initialization. This pin is pulled high internally.
AFD#	An active low output from this pin causes the printer to auto feed a line after a line is printed. This pin is pulled high internally.
ERR#	An active low input on this pin indicates that the printer has encountered an error condition. This pin is pulled high internally.
PE	An active high input on this pin indicates that the printer has detected the end of the paper. This pin is pulled high internally.

3.9.12 Serial Port 2 Connector (CN7)

Signal	PIN		Signal
DCD	1	2	RxD
TxD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

3.9.13 Serial Port 2 with External DB9 Connector (CN7)

Signal	PIN		Signal
GND	5		
		9	RI
DTR	4		
		8	CTS
TxD	3		
		7	RTS
RxD	2		
		6	DSR
DCD	1		

3.9.14 HDD LED (CN8)

SIGNAL	PIN
HDLED	2
+3.3V	1

3.9.15 Power Led & Key Lock Connector (CN11)

Signal	PIN
GND	5
#LOCK	4
GND	3
NC	2
PWLED	1

3.9.16 System Fan Connector (CN12)

SIGNAL	PIN
GND	1
+12V	2
TAC	3

3.9.17 Daughter Board Connector A (CN13)

Signal	PIN		Signal
USBP4P B	1	2	USBP3P B
USBP4N B	3	4	USBP3N B
USBV4	5	6	USBV3
GND	7	8	GND
USBP2P B	9	10	USBP1P B
USBP2N B	11	12	USBP1N B
USBV2	13	14	USBV1
GND	15	16	GND
VCCSB	17	18	SLED2
LLED2	19	20	ALED2

3.9.18 Auxiliary Power Connector (CN15)

Signal	PIN
PSON#	1
+5V	2
VCCSB	3

Note:

The default sets CN15 to 2-3 closed for AT power supply using.

3.9.19 10/100 BASE-Tx Ethernet Connector (CN16)

Signal	PIN
TxD+	1
TxD-	2
RxD+	3
NC	4
NC	5
RxD-	6
NC	7
NC	8

3.9.20 Signal Description – 10/100Base-Tx Ethernet Connector (CN16)

TXD+ / TXD-	Ethernet 10/100Base-Tx differential transmitter outputs.
RXD+ / RXD-	Ethernet 10/100Base-Tx differential receiver inputs.

3.9.21 IrDA Connector (CN17)

Signal	PIN
VCC	1
NC	2
IRRX	3
GND	4
IRTX	5

3.9.22 Daughter Board Connector B (CN18)

Signal	PIN		Signal
NC	1	2	NC
NC	3	4	NC
NC	5	6	NC
NC	7	8	NC
NC	9	10	NC
NC	11	12	NC
TDP2	13	14	GND
RDP2	15	16	TDN2
MDAT	17	18	RDN2
MCLK	19	20	+5V

Note:

Optional daughter board is available.

3.9.23 USB Connector (CN19)

Signal	PIN CH1	PIN CH2	Signal
VCC1	1	2	VCC2
D1-	3	4	D2-
D1+	5	6	D2+
GND	7	8	GND
GND	9	10	NC

3.9.24 VGA Connector (CN20)

Signal	PIN			Signal
		6		ANA-GND
RED	1		11	NC
		7		ANA-GND
GREEN	2		12	DDCDAT
		8		ANA-GND
BLUE	3		13	HSYNC
		9		VCC
NC	4		14	VSYNC
		10		DIG-GND
DIG-GND	5		15	DDCCLK

3.9.25 Signal Description – VGA Connector (CN20)

HSYNC	CRT horizontal synchronisation output.
VSYNC	CRT vertical synchronisation output.
DDCCLK	Display Data Channel Clock. Used as clock signal to/from monitors with DDC interface.
DDCDAT	Display Data Channel Data. Used as data signal to/from monitors with DDC interface.
RED	Analog output carrying the red colour signal to the CRT. For 75 Ω cable impedance.
GREEN	Analog output carrying the green colour signal to the CRT. For 75 Ω cable impedance.
BLUE	Analog output carrying the blue colour signal to the CRT. For 75 Ω cable impedance.
DIG-GND	Ground reference for HSYNC and VSYNC.
ANA-GND	Ground reference for RED, GREEN, and BLUE.

3.9.26 LCD Panel Connector (CN21)

Signal	PIN		Signal
ENBKL	39	40	ENVEE
M	37	38	LP
SHFCLK	35	36	FLM
GND	33	34	GND
P22	31	32	P23
P20	29	30	P21
P18	27	28	P19
P16	25	26	P17
P14	23	24	P15
P12	21	22	P13
P10	19	20	P11
P8	17	18	P9
P6	15	16	P7
P4	13	14	P5
P2	11	12	P3
P0	9	10	P1
VCON	7	8	GND
+3.3V	5	6	+3.3V
GND	3	4	GND
+5V	1	2	+5V

3.9.27 LCD Panel Connector Description (CN21)

PIN	24-bit TFT	18-bit TFT
P23	B0	
P22	B1	
P21	G0	
P20	G1	
P19	R0	
P18	R1	
P17	B2	B0
P16	B3	B1
P15	G2	G0
P14	G3	G1
P13	R2	R0
P12	R3	R1
P11	B4	B2
P10	B5	B3
P9	B6	B4
P8	B7	B5
P7	G4	G2
P6	G5	G3
P5	G6	G4
P4	G7	G5
P3	R4	R2
P2	R5	R3
P1	R6	R4
P0	R7	R5

3.9.28 CPU Fan Connector (CN22)

SIGNAL	PIN
GND	1
+12V	2
TAC	3

3.9.29 LCD Inverter Connector (CN23)

Signal	PIN
+5V	1
VBR	2
ENBKL	3
GND	4
+12V	5

Note:

For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VBR signal (pin 4) controlled by **VR2**. Please see the VR2 section for detailed circuitry information.

3.9.30 Internal Keyboard Connector (CN24)

Signal	PIN
KCLK	1
KDAT	2
NC	3
GND	4
+5V	5

3.9.31 Power Connector (PWR1)

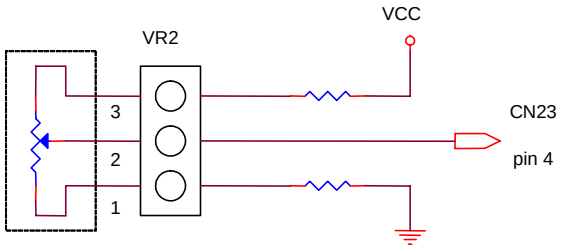
SIGNAL	PIN
+5V	12
+5V	11
+5V	10
-5V	9
GND	8
GND	7
GND	6
GND	5
-12V	4
+12V	3
+5V	2
NC	1

3.9.32 LCD Contrast Adjustment Connector (VR1)

Signal	PIN
+3.3V	1
VCON	2
GND	3

3.9.33 LCD Backlight Brightness Adjustment Connector (VR2)

Signal	PIN
+5V	1
VBR	2
GND	3



Variation Resistor (Recommended: 4.7KΩ , >1/16W)

4. Award BIOS Setup

4.1 Starting Setup

The AwardBIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

By pressing <Del> immediately after switching the system on, or

By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

```
Press DEL to enter SETUP
```

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

```
Press F1 To Continue, DEL to enter SETUP
```

4.2 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Calendar, only for Status Page Setup Menu
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the default
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

Table 1 Legend Keys

4.2.1 Navigating through the menu bar

Use the left and right arrow keys to choose the menu you want to be in.

4.2.2 To display a sub menu

Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A "➢" pointer marks all sub menus.

4.3 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

4.4 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AwardBIOS™ supports an override to the CMOS settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

4.5 Main Menu

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

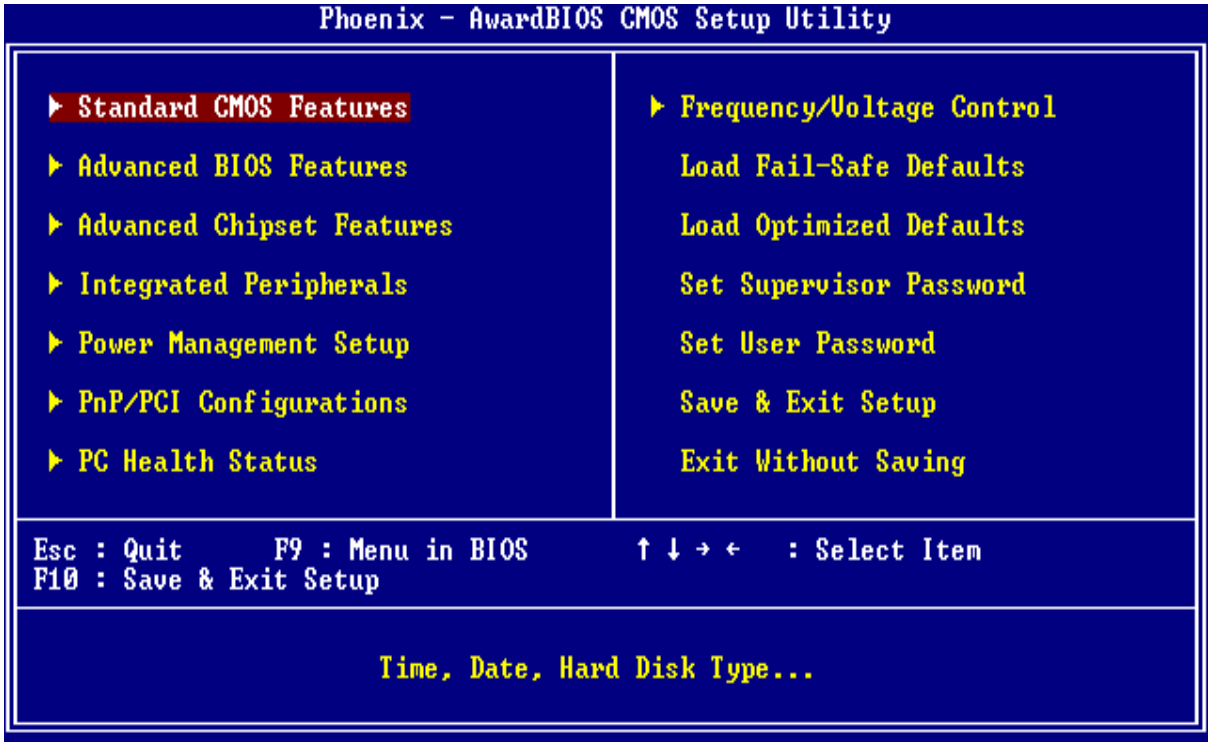

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Advanced BIOS Features
Advanced Chipset Features
Integrated Peripherals
Power Management Setup
PnP/PCI Configurations
PC Health Status
Frequency/Voltage Control
Load Fail-Safe Defaults
Load Optimized Defaults
Set Supervisor Password
Set User Password
Save & Exit Setup
Exit Without Saving
Esc : Quit F9 : Menu in BIOS ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup
Time, Date, Hard Disk Type...

Figure 1: The Main Menu

Note:

It is strongly recommended to reload Optimized setting if CMOS is lost or BIOS is updated.

4.5.1 Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

4.5.1.1 Standard CMOS Features

Use this menu for basic system configuration.

4.5.1.2 Advanced BIOS Features

Use this menu to set the Advanced Features available on your system.

4.5.1.3 Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

4.5.1.4 Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

4.5.1.5 Power Management Setup

Use this menu to specify your settings for power management.

4.5.1.6 PNP / PCI Configuration

This entry appears if your system supports PnP / PCI.

4.5.1.7 Frequency / Voltage Control

Use this menu to specify your settings for frequency/voltage control.

4.5.1.8 Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

4.5.1.9 Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

4.5.1.10 Supervisor / User Password

Use this menu to set User and Supervisor Passwords.

4.5.1.11 Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

4.5.1.12 Exit Without Save

Abandon all CMOS value changes and exit setup.

4.5.2 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

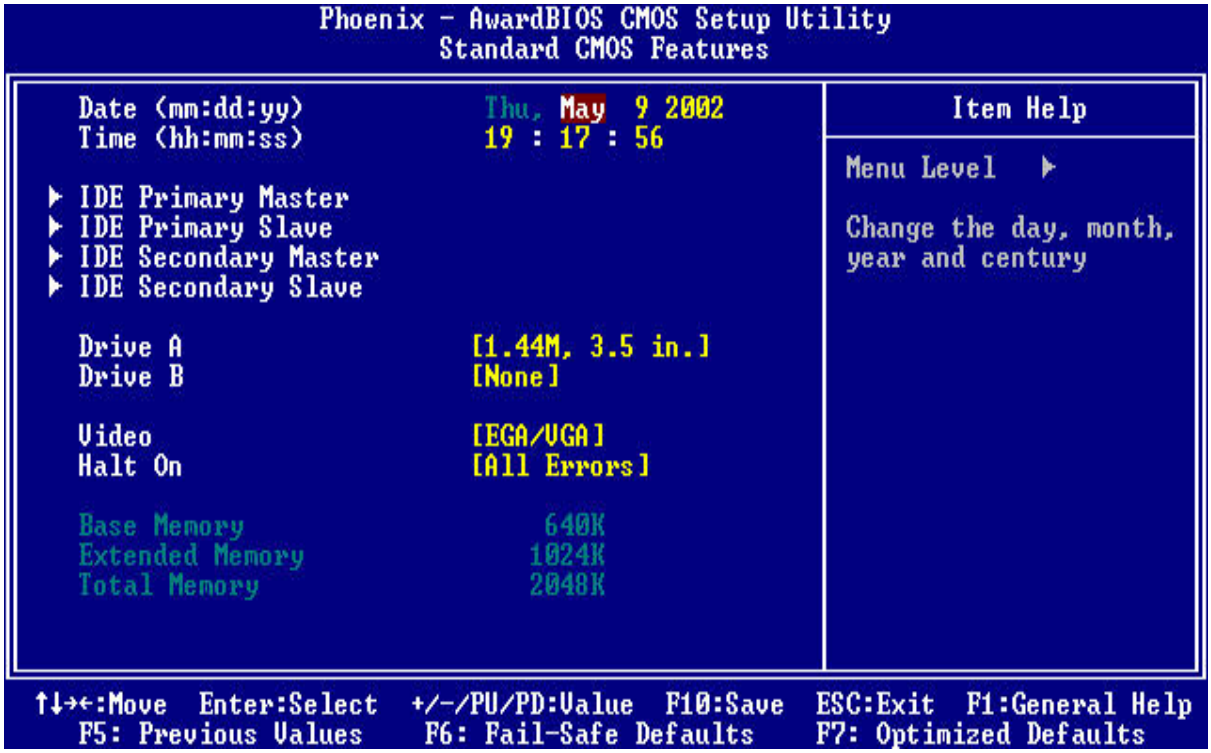

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Thu, May 9 2002
Time (hh:mm:ss) 19 : 17 : 56
IDE Primary Master
IDE Primary Slave
IDE Secondary Master
IDE Secondary Slave
Drive A [1.44M, 3.5 in.]
Drive B [None]
Video [EGA/VGA]
Halt On [All Errors]
Base Memory 640K
Extended Memory 1024K
Total Memory 2048K
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 2: The Standard CMOS Features

4.5.2.1 Standard CMOS Selection

This table shows the selections that you can make on the Standard CMOS Selection.

Item	Options	Description
Date	Month DD YYYY	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

Table 2 The Standard CMOS Features Selections

4.5.2.2 IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.

Figure 2 shows the IDE primary master sub menu.

Use the legend keys to navigate through this menu and exit to the main menu. Use Table 3 to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	Normal LBA Large Auto	Choose the access mode for this hard disk
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** **Warning**: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

Table3 Hard disk selections

4.5.3 Advanced CMOS Setup Defaults

This Setup includes all of the advanced features in the system. The detail descriptions are specified as below.

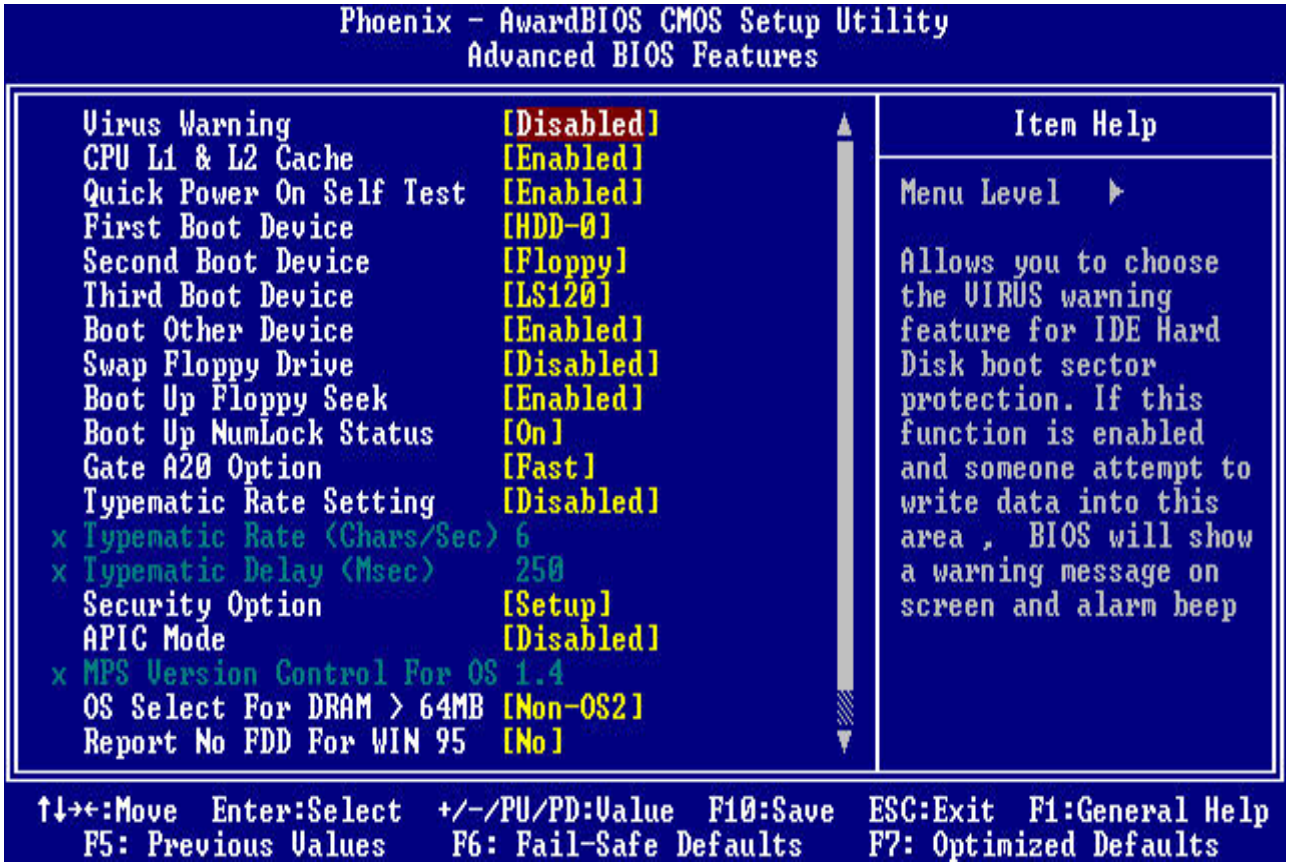

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
Virus Warning [Disabled]
CPU L1 & L2 Cache [Enabled]
Quick Power On Self Test [Enabled]
First Boot Device [HDD-0]
Second Boot Device [Floppy]
Third Boot Device [LS120]
Boot Other Device [Enabled]
Swap Floppy Drive [Disabled]
Boot Up Floppy Seek [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option [Setup]
APIC Mode [Disabled]
x MPS Version Control For OS 1.4
OS Select For DRAM > 64MB [Non-OS2]
Report No FDD For WIN 95 [No]
Item Help
Menu Level ▶
Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area , BIOS will show a warning message on screen and alarm beep
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 3: The Advanced CMOS Features

4.5.3.1 Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

4.5.3.2 CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

4.5.3.3 Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

4.5.3.4 First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice: Floppy, LS/ZIP, HDD, SCSI, CDROM, and Disabled.

4.5.3.5 Swap Floppy Drive

If the system has two floppy drives, you can swap the logical drive name assignments.

The choice: Enabled/Disabled.

4.5.3.6 Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling speeds boot up.

The choice: Enabled/Disabled.

4.5.3.7 Boot Up NumLock Status

Select power on state for NumLock.

The choice: Enabled/Disabled.

4.5.3.8 Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control GateA20

4.5.3.9 Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The choice: Enabled/Disabled.

4.5.3.10 Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down.

The choice: 6, 8, 10, 12, 15, 20, 24, 30.

4.5.3.11 Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The choice: 250, 500, 750, and 1000.

4.5.3.12 Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

4.5.3.13 APIC Mode

The BIOS supports versions 1.4 of the Intel multiprocessor specification. When enabled, The MPS Version 1.4 Control for OS can be activated.

The choice: Enabled/Disabled.

4.5.3.14 OS Select for DRAM > 64

Select the operating system that is running with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

4.5.3.15 Report No FDD for Win 95

While the FDD in " STANDARD CMOS SETUP " is set to NONE, set this option to No to release IRQ6 for passing Win95 logo. This option is irrelevant under normal operation.

The choice: Yes, No.

4.5.3.16 Small Logo (EPA) Show

When you select " Enabled" the screen shows as "Energy Star" picture at the front side up right. "Disabled" is close this picture.

The choice: Enable, Disable.

4.5.4 Advanced Chipset Setup Defaults

This Setup is very important to keep system's stability. If you are not technical person, do not attempt to change any parameters. The best way is to choose optimal default setting.

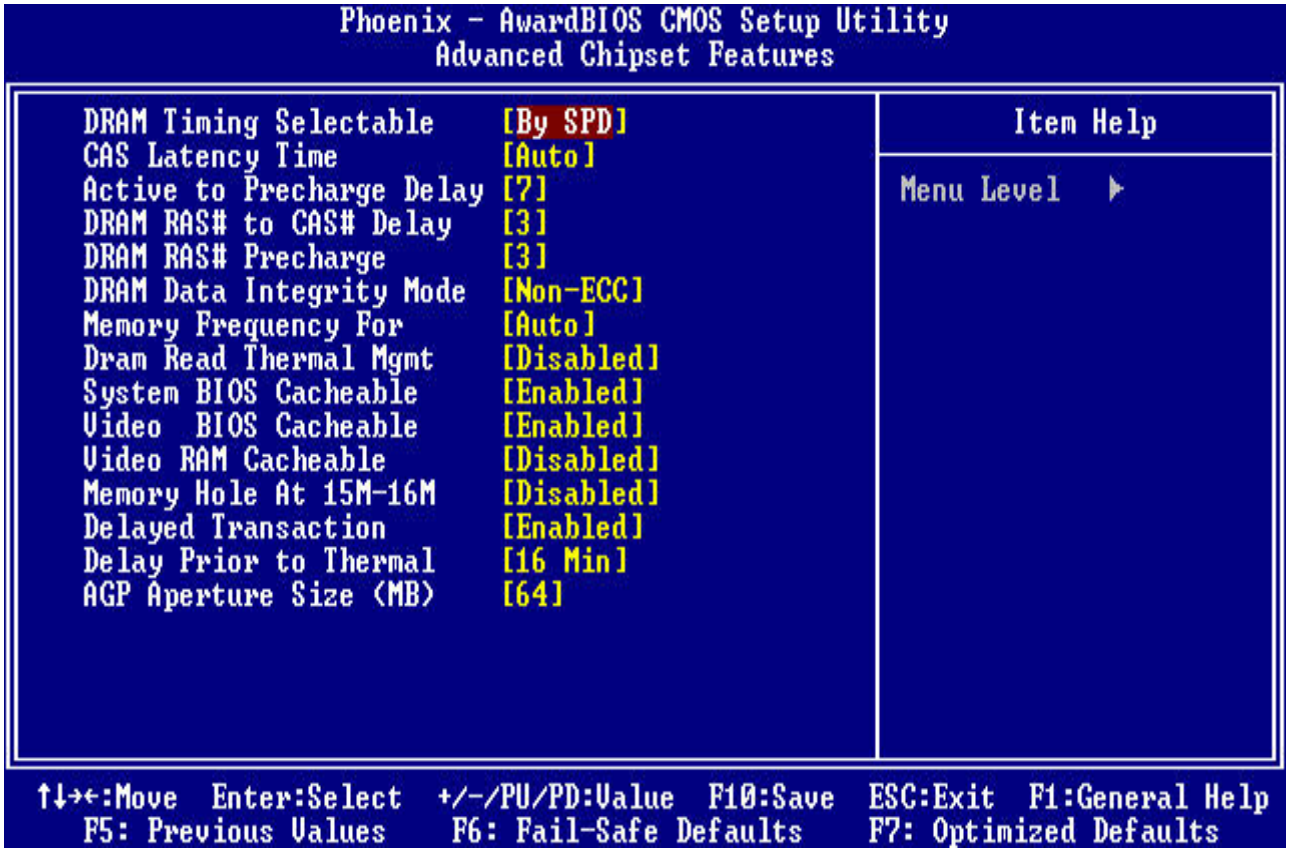

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Timing Selectable [By SPD]
CAS Latency Time [Auto]
Active to Precharge Delay [7]
DRAM RAS# to CAS# Delay [3]
DRAM RAS# Precharge [3]
DRAM Data Integrity Mode [Non-ECC]
Memory Frequency For [Auto]
Dram Read Thermal Mgmt [Disabled]
System BIOS Cacheable [Enabled]
Video BIOS Cacheable [Enabled]
Video RAM Cacheable [Disabled]
Memory Hole At 15M-16M [Disabled]
Delayed Transaction [Enabled]
Delay Prior to Thermal [16 Min]
AGP Aperture Size (MB) [64]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 4: The Advanced Chipset Features

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

4.5.4.1 DRAM Timing Selectable

If your DIMM memory has SPD (Serial Presence Detect) 8-pin IC on module, you can set this option to "By SPD". System will set your SDRAM clock and timing from the SPD IC. If the option set as "Manual", DRAM clock and timing must be set from items below:

The choice: SPD, Manual.

4.5.4.2 SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. This controls the latency between the SDRAM read command and the time that the data actually becomes available.

The choice: 1.5, 2, 2.5, 3, and Auto.

4.5.4.3 Active to Precharge delay

When you select "Manual" mode, you can set active to Precharge SDRAM timing delay.

The choice: 7, 6, 5, and Auto.

4.5.4.4 SDRAM RAS-to-CAS Delay

These are timing of SDRAM CAS Latency and RAS to CAS Delay, calculated by clocks. They are important parameters affects SDRAM performance.

The choice: 3, 2.

4.5.4.5 SDRAM RAS Precharge Time

The RAS Recharge means the timing to inactive RAS and the timing for DRAM to do recharge before next RAS can be issued.

The choice: 3, 2.

4.5.4.6 Memory Frequency For

When you select "Auto" mode, Allows DRAM PC 100 or PC 133 Data Integrity mode.

The choice: PC100, PC133, Auto.

4.5.4.7 DRAM Read Thermal Mgmt.

When you select "Manual" mode, you can set DRAM Read Thermal Mgmt.

The choice: Enable, Disable.

4.5.4.8 System BIOS Cacheable

Allows the system BIOS to be cached for faster system performance.

The choice: Enable, Disable.

4.5.4.9 Video BIOS Cacheable

Allows the video BIOS to be cached for faster video performance.

The choice: Enable, Disable.

4.5.4.10 Video RAM Cacheable

Allows the video RAM to be cached for faster video performance.

The choice: Enable, Disable.

4.5.4.11 Memory Hole At 15M-16M

Enabling this feature reserves 15MB to 16MB memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB.

The choice: Enable, Disable.

4.5.4.12 Delayed Transaction

This function is used to meet the latency of PCI cycles to from ISA bus. Try to enable or disable it, if you have ISA card compatibility problem.

The choice: Enable, Disable.

4.5.4.13 Delay Prior to Thermal

When you system temperature higher, you can set the DRAM access time slowdown between on 4 min – 32 min delay.

The choice: 4 Min, 8 Min, 16 Min, and 32 Min.

4.5.4.14 AGP Aperture Size (MB)

Choose 32, 64MB. Memory-mapped, graphics data structures can reside in the Graphics Aperture.

The choice: 4 , 8, 16, 32, 64, 128 and 256.

4.5.5 Integrated Peripherals Setup Defaults

This section describes I/O resources assignment for all of on-board peripheral devices.

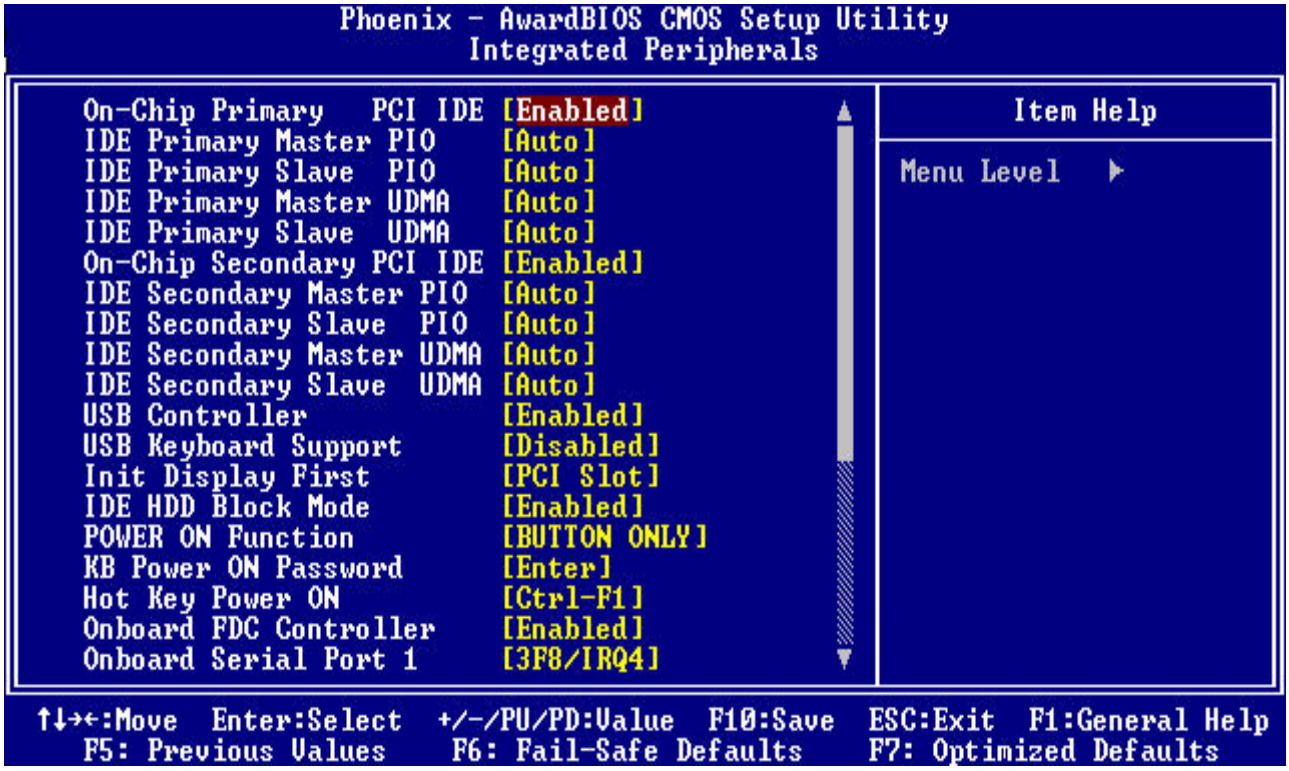

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
On-Chip Primary PCI IDE [Enabled]
IDE Primary Master PIO [Auto]
IDE Primary Slave PIO [Auto]
IDE Primary Master UDMA [Auto]
IDE Primary Slave UDMA [Auto]
On-Chip Secondary PCI IDE [Enabled]
IDE Secondary Master PIO [Auto]
IDE Secondary Slave PIO [Auto]
IDE Secondary Master UDMA [Auto]
IDE Secondary Slave UDMA [Auto]
USB Controller [Enabled]
USB Keyboard Support [Disabled]
Init Display First [PCI Slot]
IDE HDD Block Mode [Enabled]
POWER ON Function [BUTTON ONLY]
KB Power ON Password [Enter]
Hot Key Power ON [Ctrl-F1]
Onboard FDC Controller [Enabled]
Onboard Serial Port 1 [3F8/IRQ4]
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 5: The Integrated Peripherals Features

4.5.5.1 On-Chip Primary/Secondary PCI IDE

Select "Enabled" to activate each on-board IDE channel separately, Select "Disabled", if you install an add-on IDE Control card.

The choice: Enable, Disable.

4.5.5.2 IDE Primary & Secondary Master/Slave PIO

These four PIO fields let you set a PIO mode (0-4) for each of four IDE devices. When under "Auto" mode, the system automatically set the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

4.5.5.3 IDE Primary & Secondary Master/Slave UDMA

When set to "Auto" mode, the system will detect if the hard drive supports Ultra DMA mode.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

4.5.5.4 USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) controller.

The choice: Enable, Disable.

4.5.5.5 USB Keyboard Support

This item lets you enable or disable the USB keyboard driver within the onboard BIOS.

The choice: Enable, Disable.

4.5.5.6 Init Display First

Select “AGP” or “PCI Slot” for system to detect first when boot-up.

The choice: PCI Slot, AGP.

4.5.5.7 IDE HDD Block Mode

This feature enhances disk performance by allowing multi-sector data transfers and eliminates the interrupt handling time for each sector.

The choice: Enable, Disable.

4.5.5.8 POWER ON Function

This field allows you to use the keyboard to power-on the system. Use Table 3 to configure this function.

Item	Options	Description
Password	Press Enter	When this option is selected, move the cursor to the "KB Power On Password" field and press <Enter>. Enter your password. You can enter up to 5 characters. Type in exactly the same password to confirm, then press <Enter>.
Hot Key	Ctrl-F1 to Ctrl-F12	When this option is selected, move the cursor to the " Hot Key Power On " field to select a function key you would like to use to power-on the system. The options are from Ctrl-F1 to Ctrl-F12.
Any Key	Press Enter	Press any key to power-on the system,
Mouse Left	Press Enter	When this option is selected, double-click the left button of the mouse to power-on the system.
Mouse Right	Press Enter	When this option is selected, double-click the right button of the mouse to power-on the system.
Button Only	Press Enter	System can be power on with Power Button.
Keyboard 98	Press Enter	When this option is selected, press the "wake up" key of the Windows 98 compatible keyboard to power-on the system.

Table4 Power On function selections

4.5.5.9 Onboard FDC Controller

Select "Enabled" to activate the on-board FDC and "Disabled" to activate an add-on FDC.

The choice: Disable, Enable.

4.5.5.10 Onboard Serial Port 1 & 2

Select an address and corresponding interrupt for the first/second serial port. The default value for the first serial port is "3F8/IRQ4" and the second serial port is "2F8/IRQ3".

The choice: Disable, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 3F8/IRQ3, and Auto.

4.5.5.11 UART Mode Select

Select to activate the Infrared transfer function.

The choice: IrDA, ASKIR, Normal.

4.5.5.12 RxD , TxD Active

This choice: Hi, Lo; Lo, Hi; Lo, Lo; Hi, Hi.

4.5.5.13 IR Transmission Delay

If this option is enabled, transmission of data will be slower. This is recommended when you encounter transmission problem with your device.

The choice: Disable, Enable.

4.5.5.14 UR2 Duplex Mode

Select to activate the Infrared transfer function. This default setting is “Half“.

The choice: Full, Half.

4.5.5.15 Use IR Pin

When you select to IrDA or ASKIR mode, you can define use (TX,RX) pin.

The choice: RxD2, TxD2; IR-Rx2Tx2.

4.5.5.16 Onboard Parallel Port

Select address and interrupt for the Parallel port.

The choice: Disable, 378/IRQ7, 278/IRQ5, and 3CB/IRQ7.

4.5.5.17 Parallel Port Mode

Select an operating mode for the parallel port.

The choice: SPP, EPP, ECP, ECP+EPP, and Normal.

4.5.5.18 EPP Mode Select

Set parallel port as EPP1.7 or EPP1.9.

The choice: EPP1.7, EPP1.9.

4.5.5.19 ECP Mode Use DMA

Select a DMA channel if parallel port is set as ECP or ECP+EPP.

The choice: 1, 3.

4.5.5.20 PWRON After PWR-Fail

Select the option for the system action after an AC power failure.

Off	When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.
On	When power returns after an AC power failure, the system will automatically power-on.
Former-Sts	When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

4.5.6 Power Management Setup Defaults

This APM (Advanced Power Management) determines how much power energy setting below items to handle system power resource can save. The following descriptions will specify the definition of each item in details.

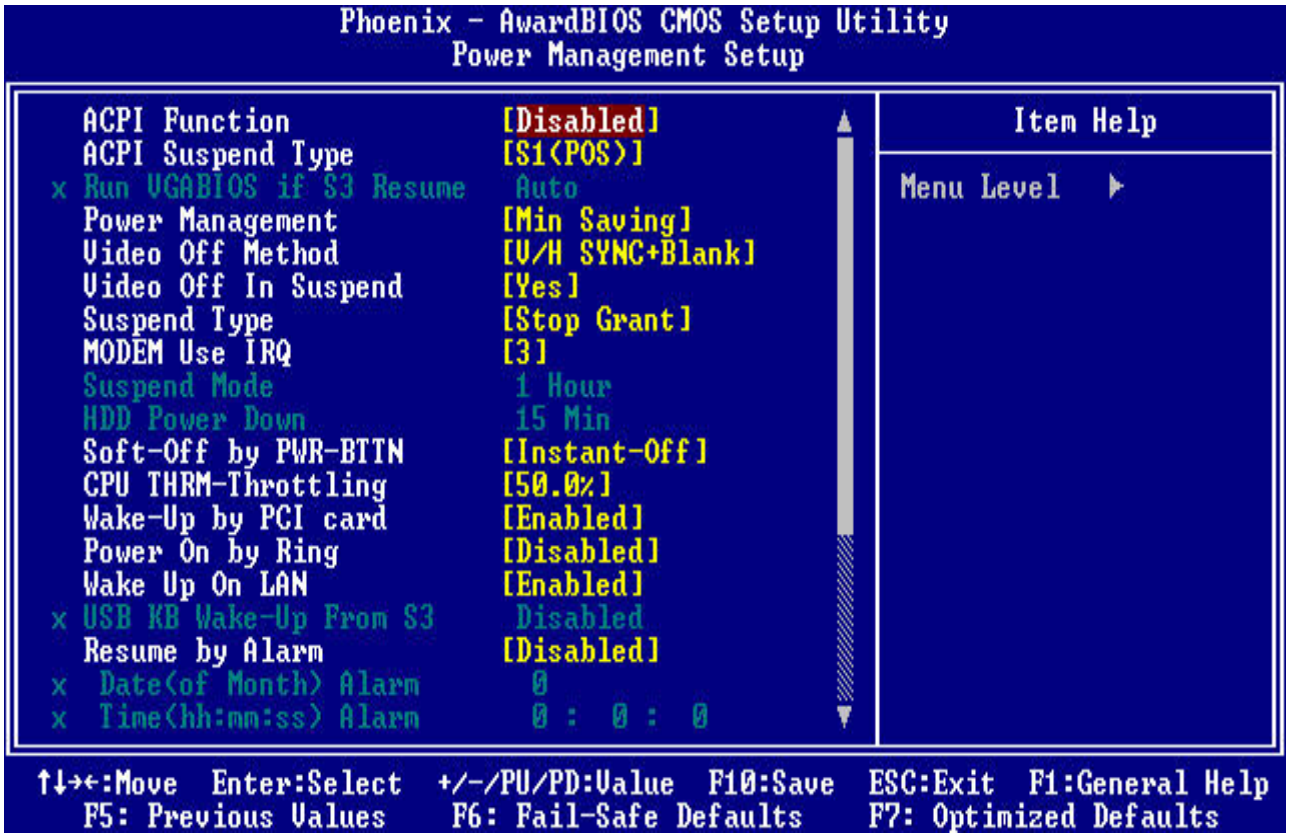

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Function [Disabled]
ACPI Suspend Type [S1(POS)]
x Run VGABIOS if S3 Resume Auto
Power Management [Min Saving]
Video Off Method [V/H SYNC+Blank]
Video Off In Suspend [Yes]
Suspend Type [Stop Grant]
MODEM Use IRQ [3]
Suspend Mode 1 Hour
HDD Power Down 15 Min
Soft-Off by PWR-BTTN [Instant-Off]
CPU THRM-Throttling [50.0%]
Wake-Up by PCI card [Enabled]
Power On by Ring [Disabled]
Wake Up On LAN [Enabled]
x USB KB Wake-Up From S3 Disabled
Resume by Alarm [Disabled]
x Date(of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Figure 6: The Power Management Setup

4.5.6.1 ACPI Function

This item allows you to enable or disable the function of Advanced Configuration and Power Interface (ACPI) that offers improved power management.

The choice: Disable, Enable.

4.5.6.2 ACPI Suspend Type

This field is used to select the type of Suspend function.

S1 (POS)	Enables the Power On Suspend function.
S3 (STR)	Enables the Suspend to RAM function. Refer to Appendix A.
S1&S3	Enables the Power On Suspend function and Enables the Suspend to RAM function. Refer to Appendix A.

4.5.6.3 VGABIOS if S3 Resume

When select S3 or S1&S3 can conveniently Enables VGA BIOS, Suspend to RAM function and Power On Suspend function.

The choice: Auto, Yes, No.

4.5.6.4 Power Management

Mini Saving	System starts power saving function when the inactivity period exceeds 1 hour.
Max Saving	System starts power saving function when the inactivity period exceeds 1 min.
User Defined	Allows user to define the inactivity period before power saving function activates,

4.5.6.5 Video Off Method

This field defines the video off features. The following options are available: DPMS OFF, DPMS Reduce ON, Blank Screen, V/H SYNC+Blank, DPMS Standby, and DPMS Suspend. The DPMS (Display Power Management System) features allow the BIOS to control the video display card if it supports the DPMS feature.

The choice: Blank Screen, V/H SYNC+Blank, DPMS.

4.5.6.6 Video Off In Suspend

This option is used to activate the video off feature when the system enter the suspend mode.

The choice: Yes, No.

4.5.6.7 Suspend Type

System further shuts down all devices and all right select stop Grant or Power on suspend function.

The choice: stop Grant , PowOn Suspend.

4.5.6.8 MODEM Use IRQ

This item tells the Power Management BIOS which IRQ is assigned to the installed MODEM.

The choice: NA, 3, 4, 5, 7, 9, 10 and 11.

4.5.6.9 Suspend Mode

System further shuts down all devices except for CPU itself. This is the third level of Power Management.

4.5.6.10 HDD Power Down

This instructs hard drives to shut off while in the Power Management modes.

4.5.6.11 Soft-Off by PWR-BTTN

When set to "Delay 4 Sec.", the power button has a dual function where pressing less than 4 seconds will place the system in sleep mode and shut down the system when the button is held more than 4 seconds. "Instant-Off", the system will be shut down right away when the power button is pressed.

The choice: Instant-Off, Delay 4 Sec.

4.5.6.12 CPU Thermal-Throttling

Set the percent of power consumption when CPU over heat.

The choice: 87.5%, 75.0%, 62.5%, 50.0%, 37.5%, 25.0%, 12.5%.

4.5.6.13 Wake-Up by PCI card

If your PCI card supports PME (Power Management Event) signal and this item is set as Enabled, PCI peripherals drive PME signal to wake the system from low-power states S1-S5.

The choice: Disable, Enable.

4.5.6.14 Power On by Ring

The option lets you specify enable or disable external Modem Wake Up function. It powers up the computer when the modem receives a call while the computer is in Soft-off mode.

The choice: Disable, Enable.

Note:

The computer cannot receive or transmit data until the computer and application are fully running. After the item is set as enabled, the system must enter to OS once before system is turned off.

4.5.6.15 Wake up on LAN

This allows you to remotely power up your systems through your network by sending a wake-up frame or signal. With this feature, you can remotely upload/download data to/from systems during off-peak hours. Set to Enabled to set this feature. Please refer to session 2.4.6 for more information.

The choice: Disable, Enable.

4.5.6.16 USB KB Wake-up From S3

If your USB KB supports PME (Power Management Event) signal and this item is set as Enabled, USB KB peripherals drive PME signal to wake the system from low-power states S3.

The choice: Disable, Enable.

4.5.6.17 Resume by Alarm

Set this option to enable or disable the RTC Alarm to Wake Up the system, which is set at soft off.

The choice: Disable, Enable.

4.5.6.18 Date (of Month) Alarm, Time (hh:mm:ss) Alarm

Alarm time on Date / Hour / Minute / Second.Set these options to specify the RTC

4.5.6.19 Primary/Secondary IDE 0/1, FDD, COM, LPT Port & PCI PIRQ [A-D]

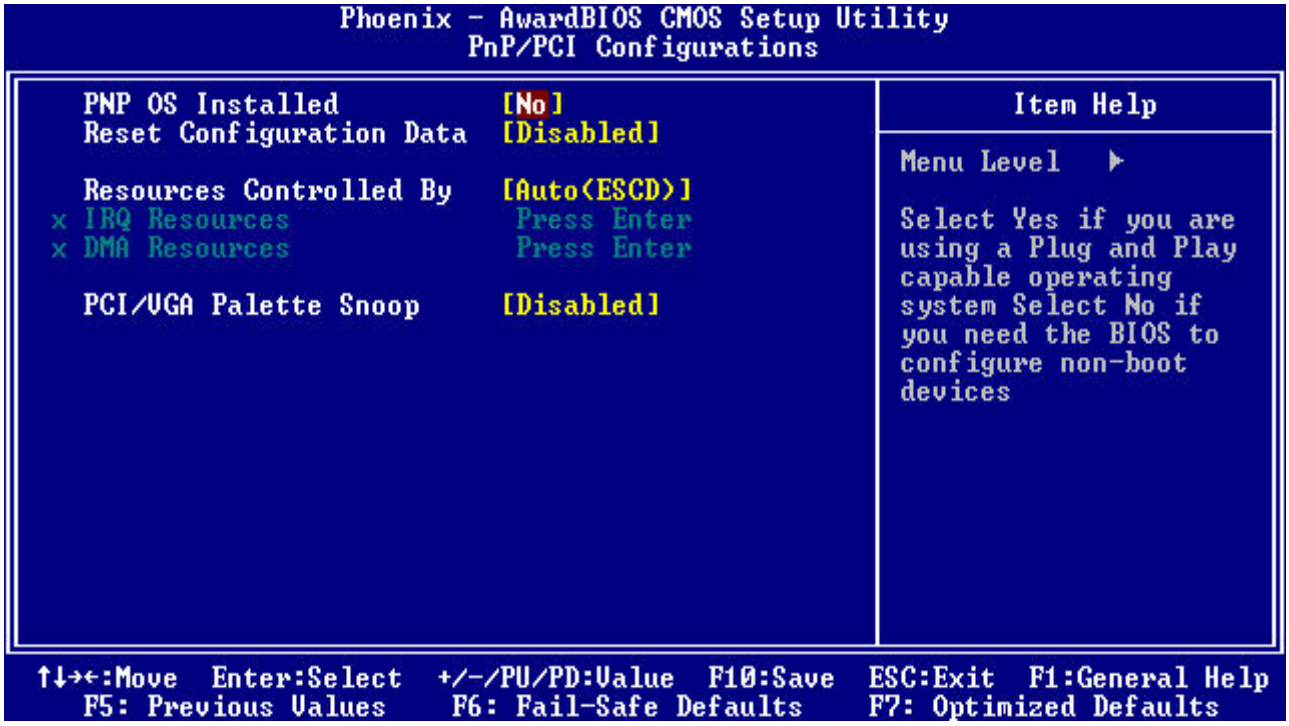
These items enable or disable the detection of IDE, floppy, serial, parallel port and PCI PIRQ [A-D] activities for power down state transition. Actually it detects the read/write to/from I/O port.

The choice: Disable, Enable.

4.5.7 PnP/ PCI Setup Defaults

This section describes configuring the PCI bus system. PCI (Peripheral Component Interconnect) is a system that allows I/O devices to operate at speeds nearing CPU's when they communicate with own special components.

All of options described in this section are important and technical and it is strongly recommended that only experienced users could make any changes to the default settings.


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
PNP OS Installed [No]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
x IRQ Resources Press Enter
x DMA Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
Item Help
Menu Level ▶
Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.5.7.1 PNP OS installed

This field allows you to use a Plug-and-Play (PnP) operating system.

Please set it as "No " if the operating system has no PnP function or to avoid reassigning the IRQs by the operating system.

The choice: Yes, No.

4.5.7.2 Reset Configuration Data

In case a conflict occurs after you assign the IRQs or after you configure your system, you can enable this function to allow your system to automatically reset your configuration and reassign the IRQs, DMAs, and I/O address.

The choice: Disable, Enable.

4.5.7.3 Resources Controlled By

Default setting is “Auto (ESCD)”. This setting allows the BIOS to self detect setting and Plug-and-Play devices during start up. The user can select and configure IRQs under "Manual" mode.

The choice: Auto (ESCD), Manual.

4.5.7.4 IRQ Resources

These options specify the bus that the named interrupt request lines (IRQs) are used on. These options allow you to specify IRQs for use by legacy ISA adapter cards. These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to BIOS configurable devices. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these PCI/PnP Setup options to remove the IRQ by assigning the option to the *ISA/EISA* setting. Onboard I/O is configurable by AMIBIOS. The IRQs used by onboard I/O are configured as *PCI/PnP.* The settings are *PCI/PnP* or *ISA/EIS*A. The default settings are *PCI/Pn*P.

4.5.7.5 DMA Resources

Select the devices according to your DMA requirements

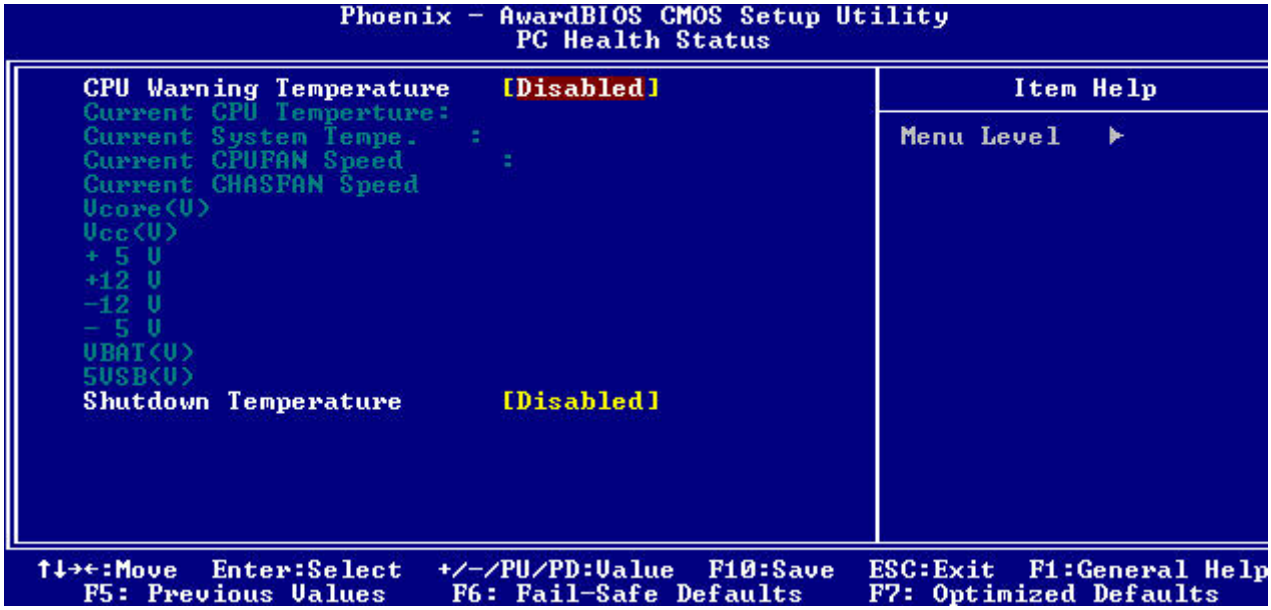
4.5.7.6 PCI/VGA Palette Snoop

Enable this option to correct screen color shifts, when there is a combination of VGA cards, accelerator cards, or MPEG cards present.

The choice: Disable, Enable.

4.5.8 PC Health Status Setup Defaults

This setup describes current CPU surface temperature status detected from hardware monitor sensor. The status showed on screen will include:



4.5.8.1 CPU Warning Temperature

Select to enable or disable the hardware monitor sensor and set the warning temperature.

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options
Warning Temperature	75°C /167°F	75°C /167°F	Disabled, 50/122 53/127 56/133 60°C /140°F, 63°C /145°F, 66°C /151°F, 70°C /158°F,

4.5.8.2 Current System & CPU Temperature (xx˚C/xx˚F)

The onboard hardware monitor is able to detect the temperatures of motherboard and CPU. These values refresh upon any key entry. The function is optional.

4.5.9 Current CPUFAN , CHASFAN & PWRFAN Speed

The onboard hardware monitor is able to detect chassis fan speed, CPU fan and PWR fan speed in Rotations Per Minute (RPM). These values refresh upon any key entry in the BIOS setup screen. The function is optional.

4.5.9.1 Vcore, Vcc3, +5V, +12V, -12V,-5V, VBAT & 5VSB

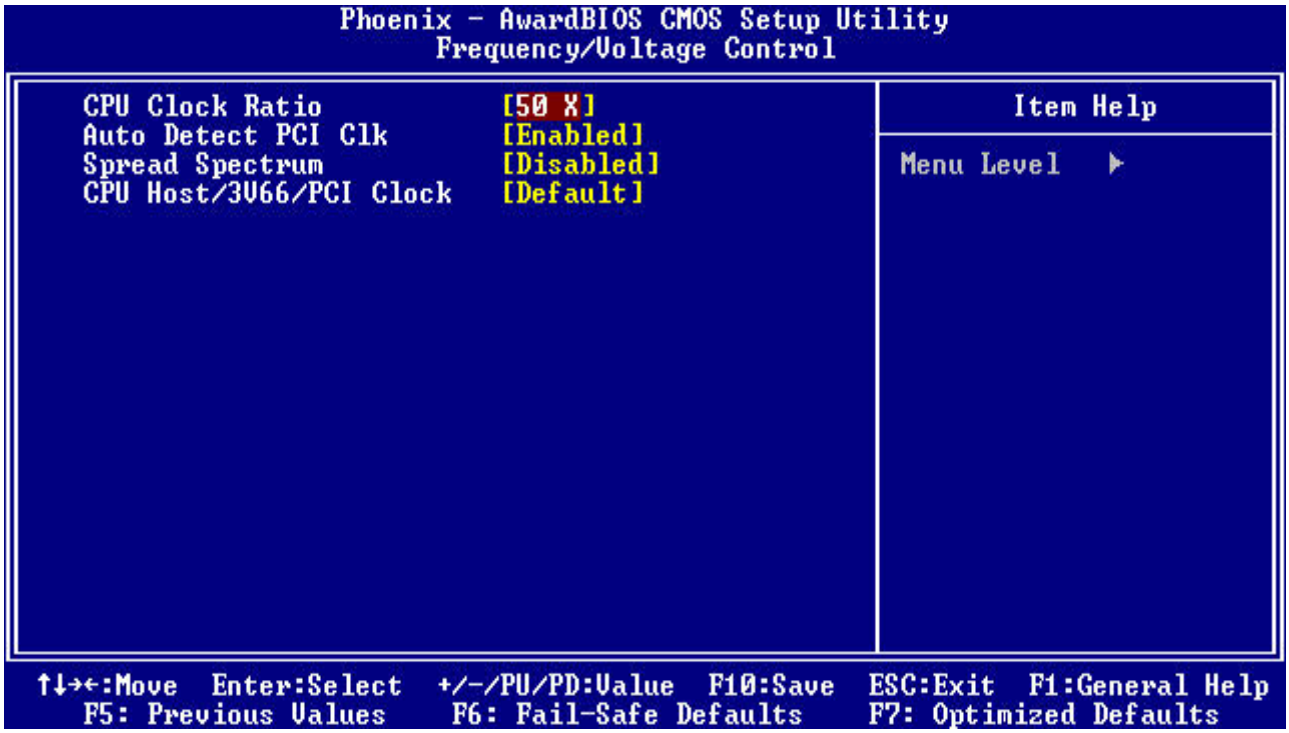
The onboard hardware monitor is able to detect the voltage output by the voltage regulators. These values refresh upon any key entry. The function is optional.

4.5.9.2 Shutdown Temperature

When you select " enable ", the CPU working temperature at over setting. Should be shutdown PC. " Disabled " is close this functions.

BIOS Setup Items	Optimal Default	Failsafe Default	Other Options
Warning Temperature	75°C /167°F	75°C /167°F	Disabled, 60°C /140°F, 65°C /145°F, 70°C /158°F, 75°C /165°F,

4.5.9.3 Frequency Control Setup Defaults


Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control
CPU Clock Ratio [50 X]
Auto Detect PCI Clk [Enabled]
Spread Spectrum [Disabled]
CPU Host/3V66/PCI Clock [Default]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.5.9.4 CPU Clock Ratio

The Ratio of some latest Intel Corporation fixes CPUs and VIA so the Ratio cannot be changed with the setting. If it did not fix by CPU manufacturer, it may be changed with the setting. Over specification operations are not recommended.

4.5.9.5 Auto Detect PCI CLK

If you have the EMI issue, set the option as Enabled, it keeps its interference under control.

The choice: Disable, Enable.

4.5.9.6 Spread Spectrum

Using the setting " Enabled ", for EMI testing will increase the system stability. The default setting is " Disabled ".

The choice: Disable, Enable.

4.5.9.7 CPU Host/3v66/PCI Clock

Choose Default, 100, 103, 105, 107,109,111, 114, 117,120, 127, 130 MHz for the external frequency of your CPU. You can select Default, 66, 69,70,71,73,74,76,78,80,85,87MHz. if your CPU is 100Mhz FSB and select Default, 100, 103, 105, 107,109,111,114,117, 120, 127 or 130 MHz if the CPU is 100Mhz FSB.

Warning: Over specification operations are not recommended.

The frequency-mapping table of the elements:

CPU Host/3V66	PCI
100 / 66 MHz	33 MHz
103 / 69 MHz	34 MHz
105 / 70 MHz	35 MHz
107 / 71 MHz	36 MHz
109 / 73 MHz	36 MHz
111 / 74 MHz	37 MHz
114 / 76 MHz	38 MHz
117 / 78 MHz	39 MHz
120 / 80 MHz	40 MHz
127 / 85 MHz	42 MHz
130 / 87 MHz	43 MHz

4.5.10 Load Fail-Safe Defaults

This loads the troubleshooting default values permanently stored in the ROM chips. These settings are not optimal and turn off all high performance features. You should use these values only if you have hardware problems. Highlight this option in the main menu and press <Enter>. The message below will appear.

Load Fail-Safe Defaults (Y/N)? N

If you want to process, type <Y> and press <Enter>. The default settings will be loaded.

4.5.11 Load Optimized Defaults

This feature loads optimized setting from the BIOS ROM. Use the default values as standard values for your system. Highlight this option in the main menu and press <Enter>. The message below will appear.

Load Optimized Defaults (Y/N)? N

Type <Y> and press <Enter> to load the Setup default values.

4.5.12 Set Supervisor/User Password

You can assign, modify, or cancel password settings. To modify, highlight “Set Supervisor Password” or “Set User Password” and press the <Enter> key. The screen will prompt you (“Enter Password:”). Enter your password. The maximum size of the password is 8 characters. System will prompt you to reenter the password to verify. Remember the passwords are case sensitive.

If you want to remove the passwords, either delete passwords or press <Enter> when prompting for new password.

If you want it to require password upon initial system startup and upon entering the CMOS Setup Utility, you will need to change the selection of the (Security Option) under (Advanced BIOS Features) to “System”.

If the setting is “Setup”, the system will only require the password you activate CMOS Setup Utility.

4.5.13 Save & Exit Setup

When all the changes have been made, highlight "Save & Exit Setup" and press <Enter>. The message below will appear:

Save to CMOS and Exit (Y/N)? N

Type "Y" and press <Enter>. The modifications you have made will be written into the CMOS memory, and the system will reboot.

4.5.14 Exit Without Saving

When you do not want to save the changes you have made, highlight "Exit Without Saving" and press <Enter>, the message below will appear:

Quit Without Saving (Y/N)? N

Type "Y" and press <Enter>. The system will reboot.

4.6 Flash BIOS Utility

Utilize Award Flash BIOS programming utility to update on-board BIOS for the future new BIOS version. Please contact your technical window to get this utility if necessary.

Note:

Remark or delete any installed Memory Management Utility (such as HIMEM.SYS, EMM386.EXE, QEMM.EXE, …, etc.) in the CONFIG.SYS files before running Flash-programming utility.

5. Driver Installation

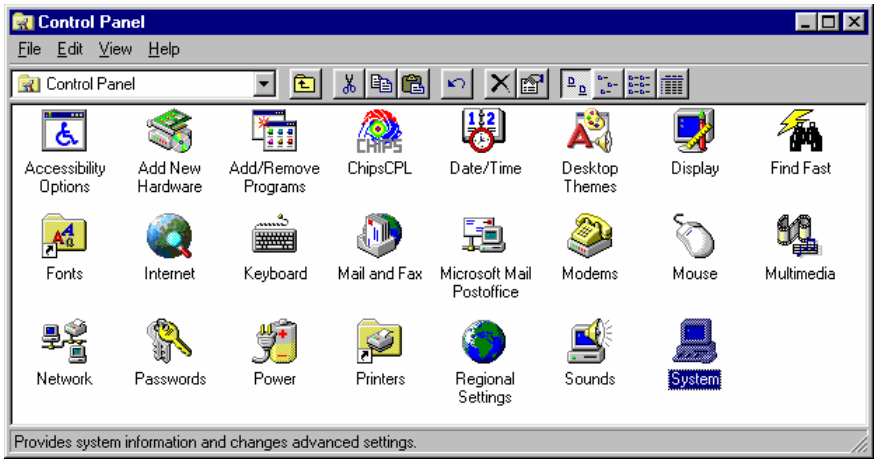
5.1 Driver Installation for Ethernet Adapter

5.1.1 Windows 9x

The best way to install the driver for the Ethernet controller is to use the plug and play system of Windows 9x. The following procedures illustrate how the installation can be done.

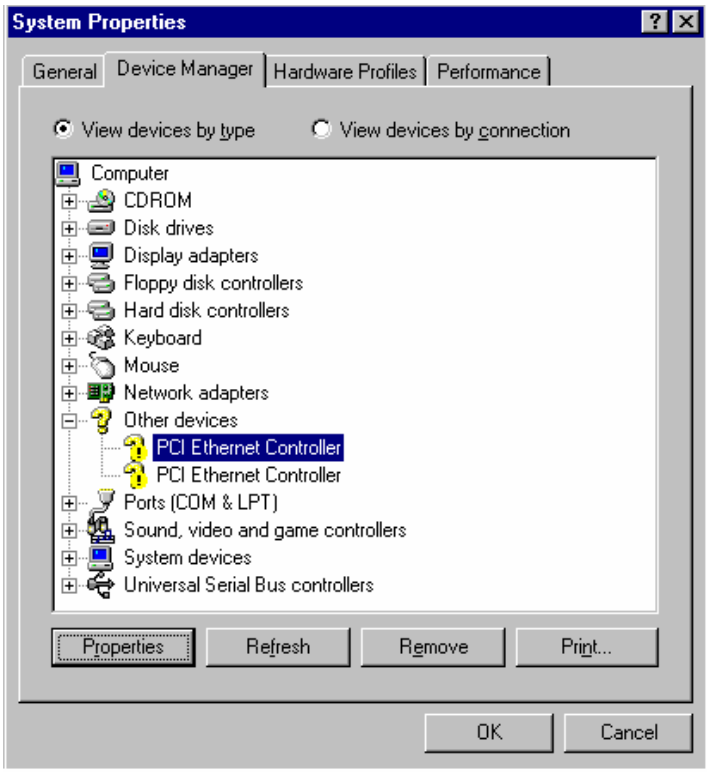
1. If a driver for the Ethernet controller is already installed, it must be removed first. This can be done by following the steps shown below.

    - Click the '*Start*' button, click on '*Settings*' and on '*Control panel*' to open the control panel. Your display should now look as below (possibly with different size and icons):



    - Double click the '*System*' icon (highlighted above).
    - Select the '*Device Manager*' tab.

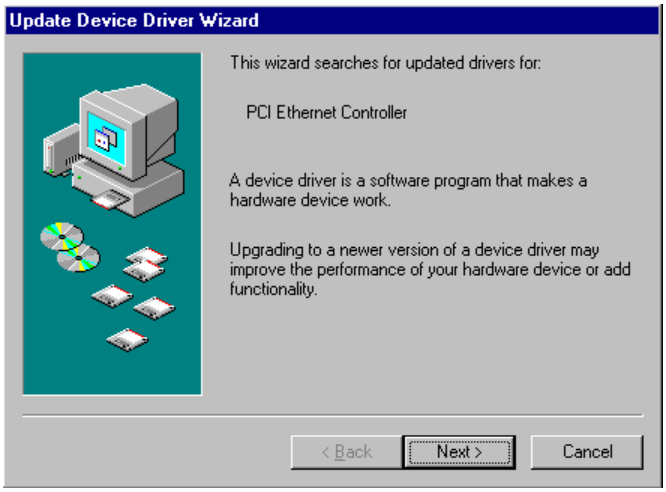
- If the '*Network adapters*' line is present, expand the line and remove the PCI Ethernet Adapter. This is done by selecting the line and clicking the '*Remove*' button. Before removal of the adapter(s), your screen might look like this:



- When all adapters are removed (or none were present), a new driver can be installed now.

2. Reboot the computer.

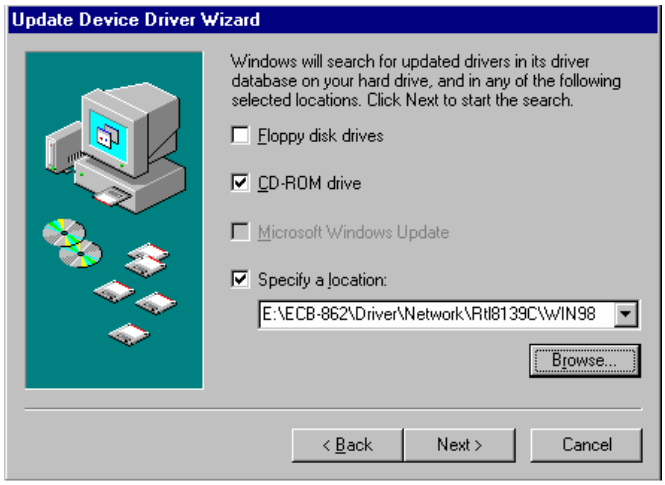
3. During the boot up the network adapter should be detected as shown below. Click the '*Next*' button.


Update Device Driver Wizard
This wizard searches for updated drivers for:
PCI Ethernet Controller
A device driver is a software program that makes a hardware device work.
Upgrading to a newer version of a device driver may improve the performance of your hardware device or add functionality.
< Back
Next >
Cancel

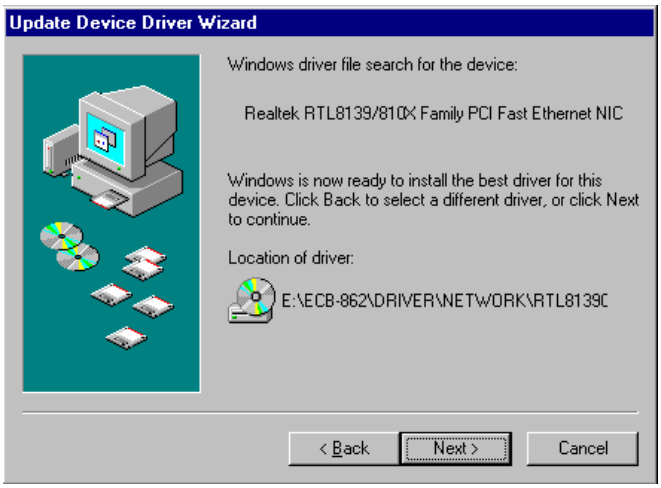
4. Click the '*Next*' button to continue the driver installation.

Update Device Driver Wizard
What do you want Windows to do?
Search for a better driver than the one your device is using now. (Recommended)
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

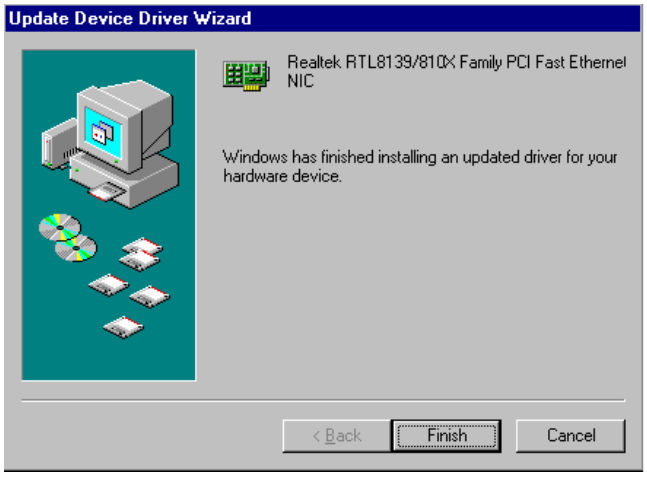
5. Specify the location of network adapter and click '*Next*' (see below).


Update Device Driver Wizard
Windows will search for updated drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
E:\ECB-862\Driver\Network\Rtl8139C\WIN98
Browse...
< Back
Next >
Cancel

6. Click the '*Next*' button to install the network adapter driver.


Update Device Driver Wizard
Windows driver file search for the device:
Realtek RTL8139/810X Family PCI Fast Ethernet NIC
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
E:\ECB-862\DRIVER\NETWORK\RTL8139C
< Back
Next >
Cancel

7. Click the '*Finish*' button.


Update Device Driver Wizard
Realtek RTL8139/810X Family PCI Fast Ethernet NIC
Windows has finished installing an updated driver for your hardware device.
< Back
Finish
Cancel

8. To complete the installation, reboot the computer by clicking the '*Yes*' button in the window shown below.

System Settings Change
To finish setting up your new hardware, you must restart your computer.
Do you want to restart your computer now?
Yes
No

9. Please follow the Procedure 1-8 to install another Ethernet Adapter.

10. After the system restarts, the network adapter should be installed. Protocols, clients etc. may now be installed for the network in use. Further configuration of the adapter may be made in the '*Advanced*' section of the driver properties. These options may be accessed through the '*Network*' icon in the control panel (Select the network adapter, click the '*Properties*' button and select the '*Advanced*' tab).

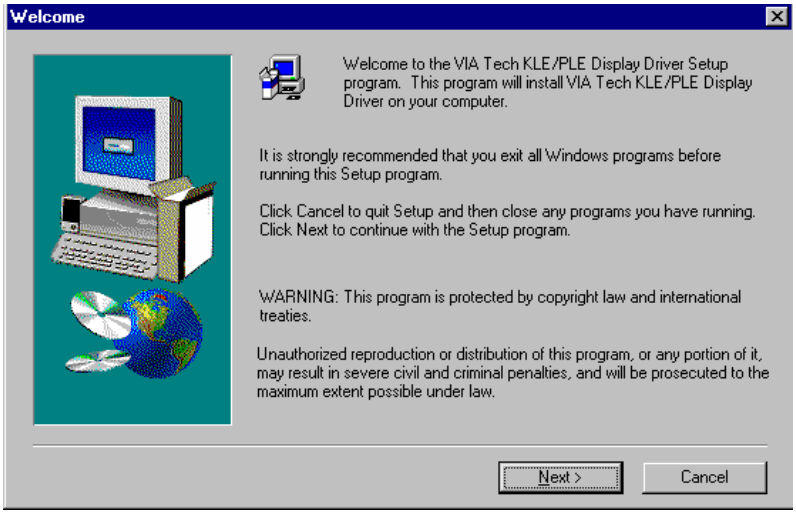
5.2 Driver Installation for Display Adapter

5.2.1 Windows 9x

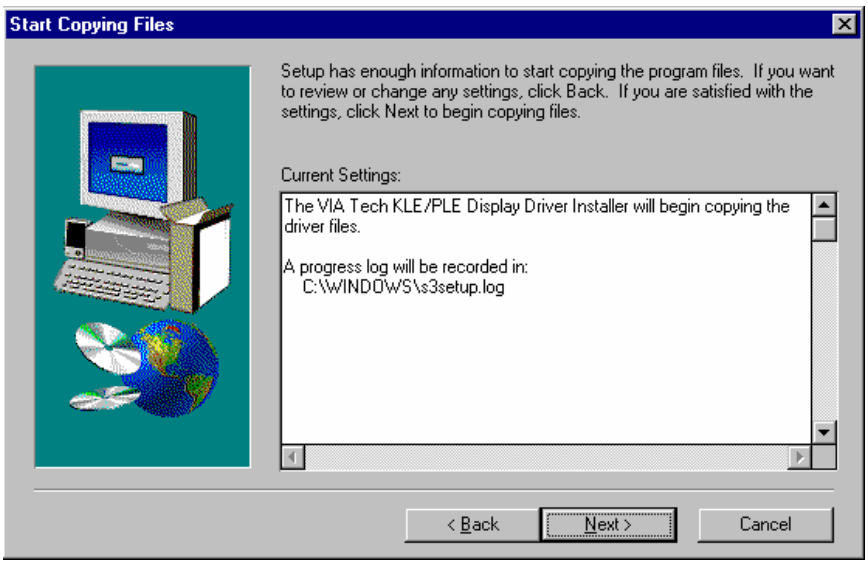
The following steps will install the display driver for the 'VIA PLE133T ' display controller.

1. Find the directory of the driver disk with VIA PLE133T VGA driver. Double click the icon 'setup' on the folder. This should start the driver setup process as shown below:

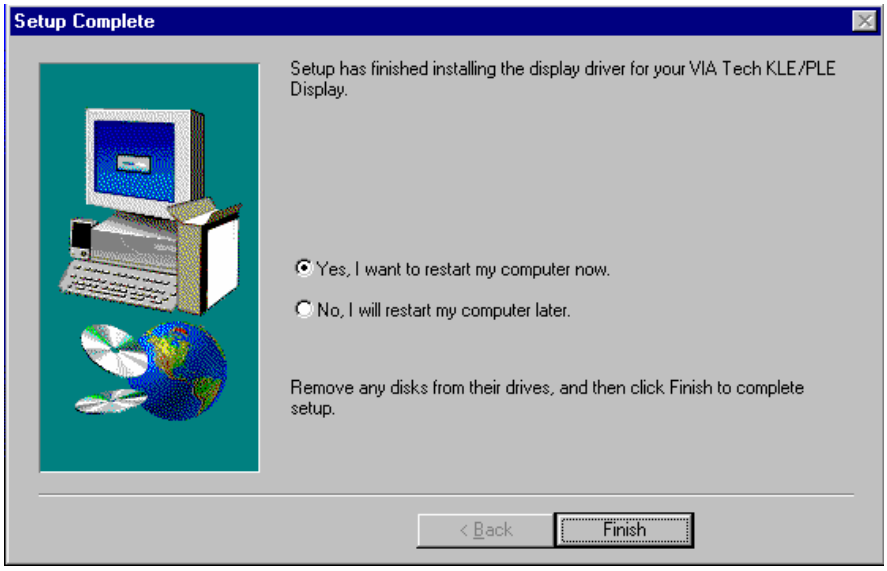
2. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'


Welcome
Welcome to the VIA Tech KLE/PLE Display Driver Setup program. This program will install VIA Tech KLE/PLE Display Driver on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel

3. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'


Start Copying Files
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:
The VIA Tech KLE/PLE Display Driver Installer will begin copying the driver files.
A progress log will be recorded in:
C:\WINDOWS\s3setup.log
< Back
Next >
Cancel

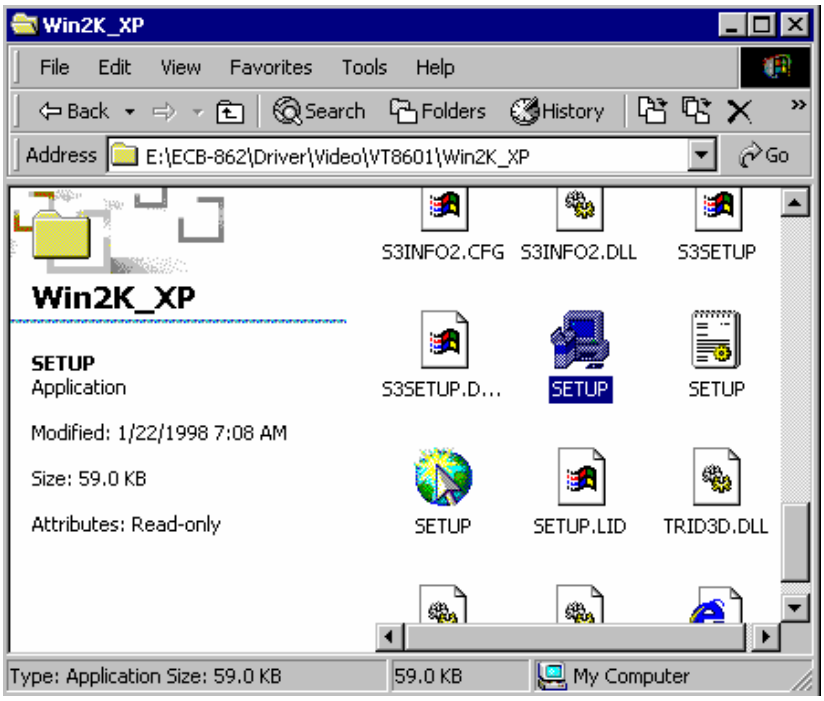
4. To complete the display driver installation, reboot the computer by clicking the '*Finish*' button in the window shown below.


Setup Complete
Setup has finished installing the display driver for your VIA Tech KLE/PLE Display.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish

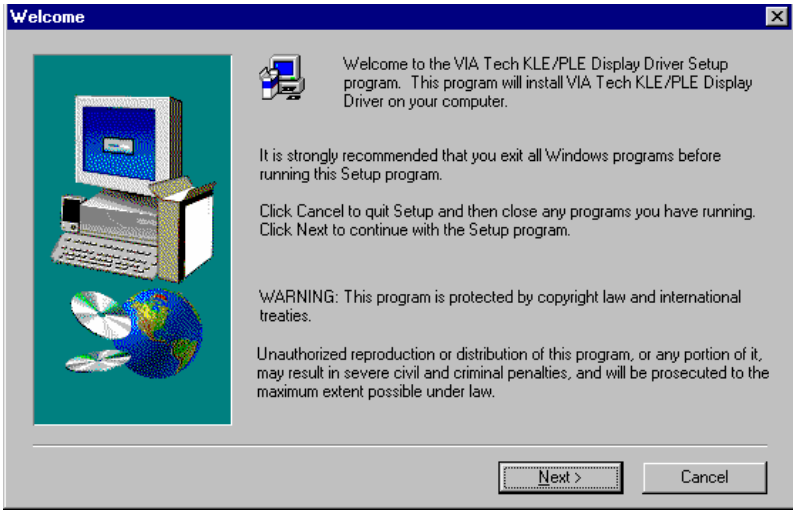
5.2.2 Windows 2000

The following steps will install the display driver for the 'VIA PLE133T ' display controller.

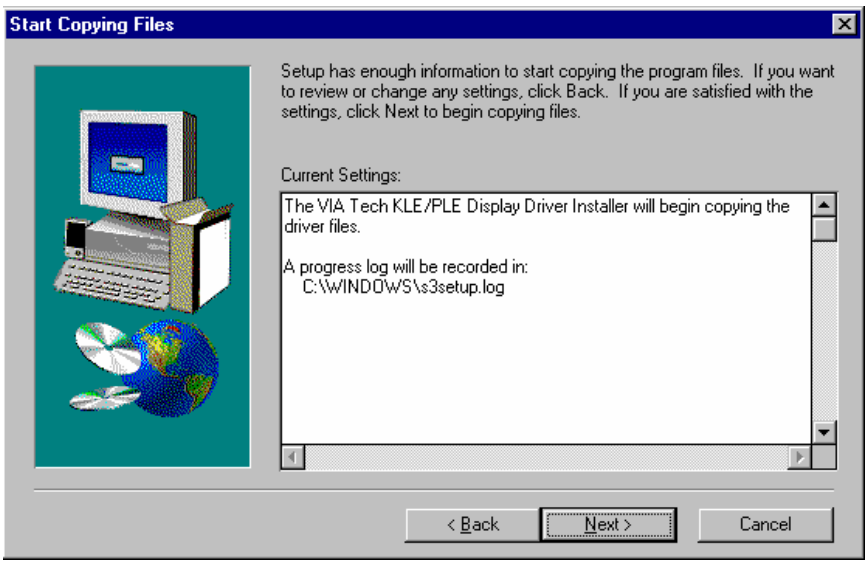
1. Find the directory of the driver disk with VIA PLE133T VGA driver. Double click the icon 'setup' on the folder. This should start the driver setup process as shown below:



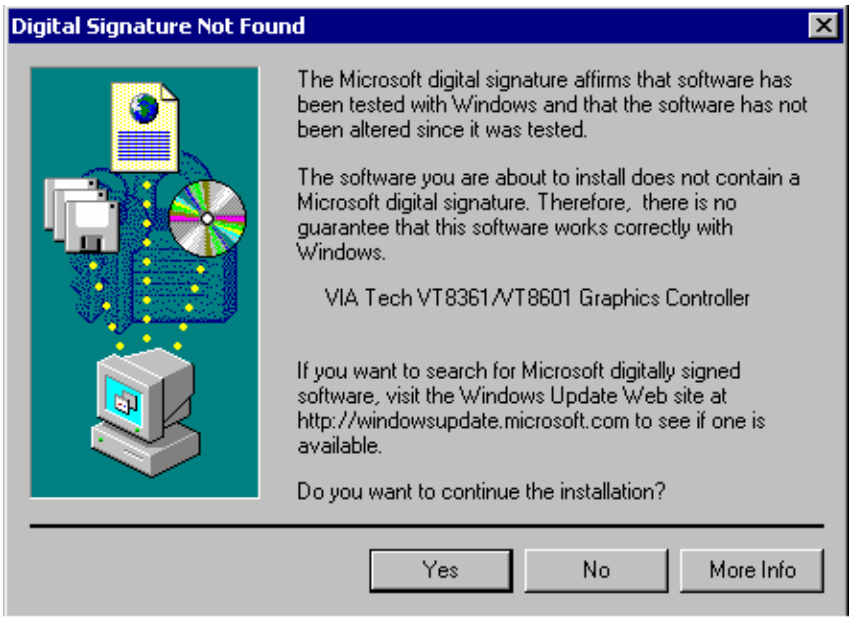
2. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'


Welcome
Welcome to the VIA Tech KLE/PLE Display Driver Setup program. This program will install VIA Tech KLE/PLE Display Driver on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel

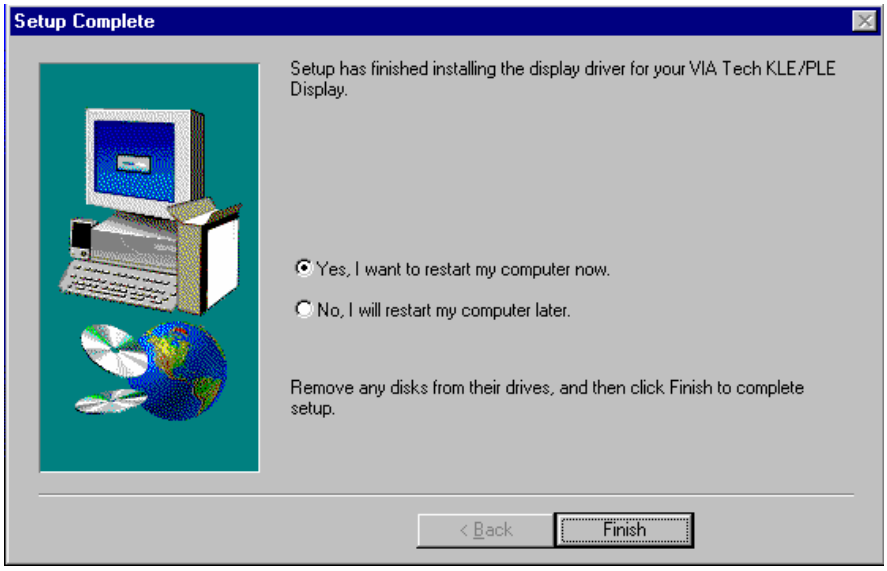
3. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'


Start Copying Files
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files.
Current Settings:
The VIA Tech KLE/PLE Display Driver Installer will begin copying the driver files.
A progress log will be recorded in:
C:\WINDOWS\s3setup.log
< Back
Next >
Cancel

4. Click the '*Yes*' to continue the driver install. If you want to stop the installation, click the '*No*'


Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
VIA Tech VT8361/VT8601 Graphics Controller
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

5. To complete the display driver installation, reboot the computer by clicking the '*Finish*' button in the window shown below.


Setup Complete
Setup has finished installing the display driver for your VIA Tech KLE/PLE Display.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish

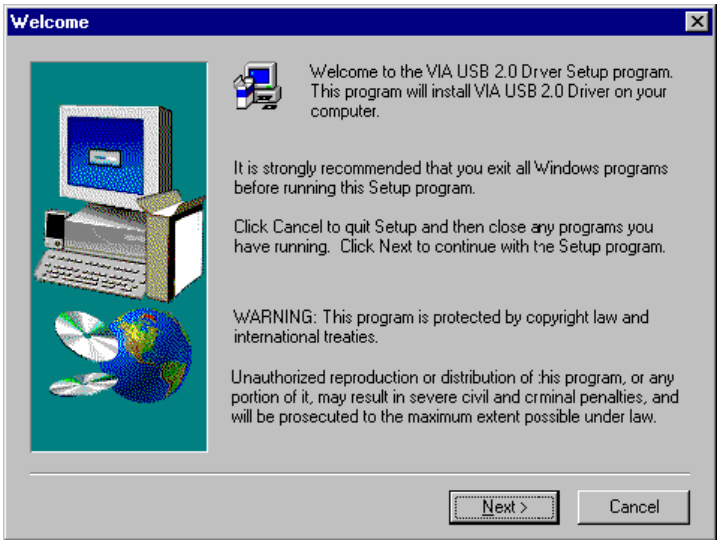
5.3 Driver Installation for USB2.0 Adapter

5.3.1 Windows 9x

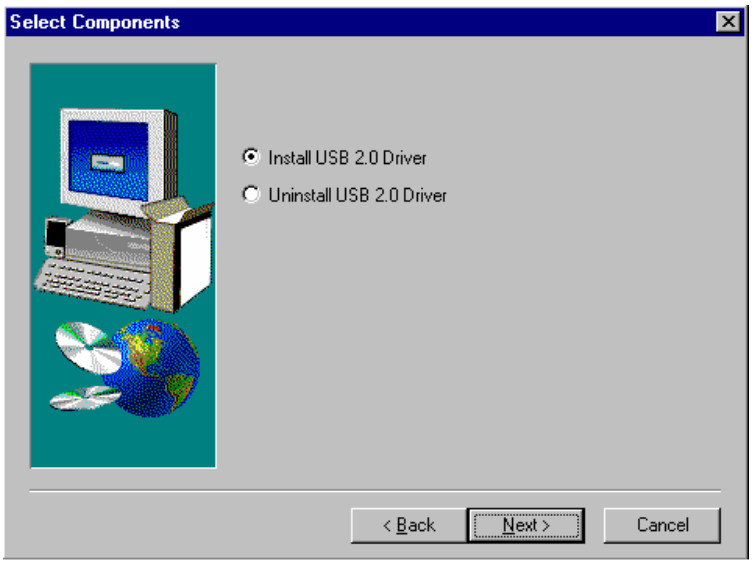
The following steps will install the display driver for the VIA VT6202 USB2.0 controller.

1. Find the directory of the driver disk with VIA VT6202 USB2.0 driver. Double click the icon 'setup' on the folder. This should start the driver setup process as shown below:

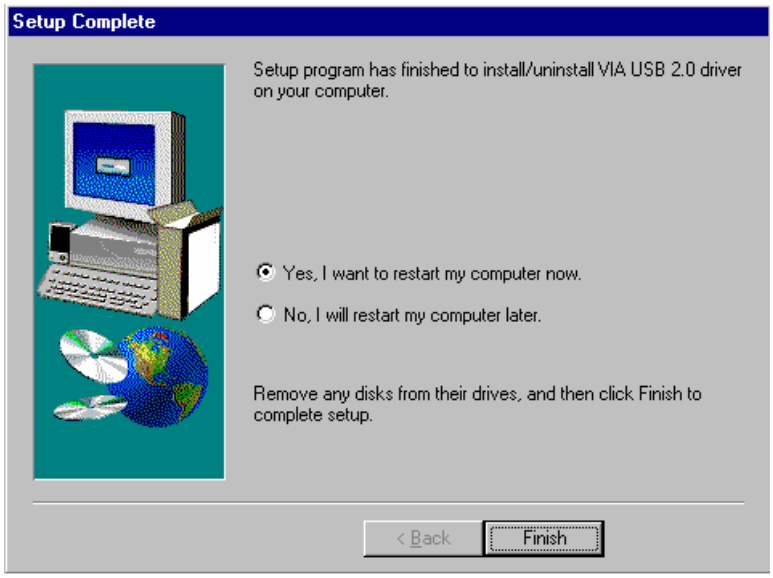
2. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'


Welcome
Welcome to the VIA USB 2.0 Driver Setup program. This program will install VIA USB 2.0 Driver on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel

3. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'



4. To complete the USB Adapter driver installation, reboot the computer by clicking the '*Finish*' button in the window shown below.

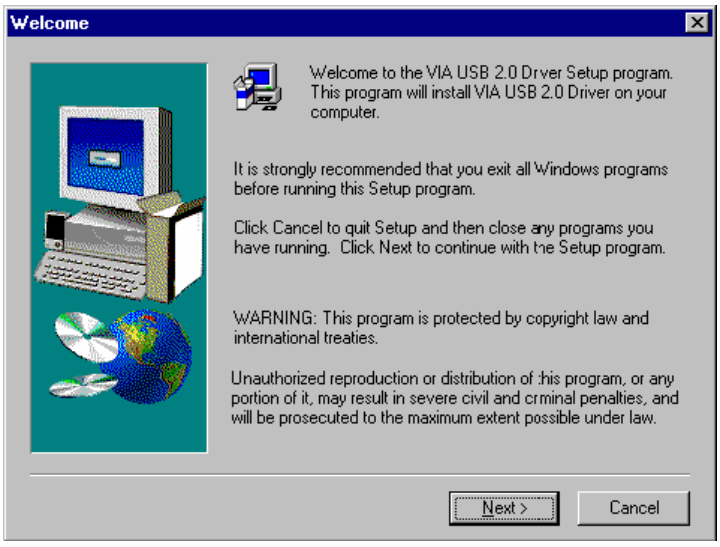

Setup Complete
Setup program has finished to install/uninstall VIA USB 2.0 driver on your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish

5.3.2 Windows 2000

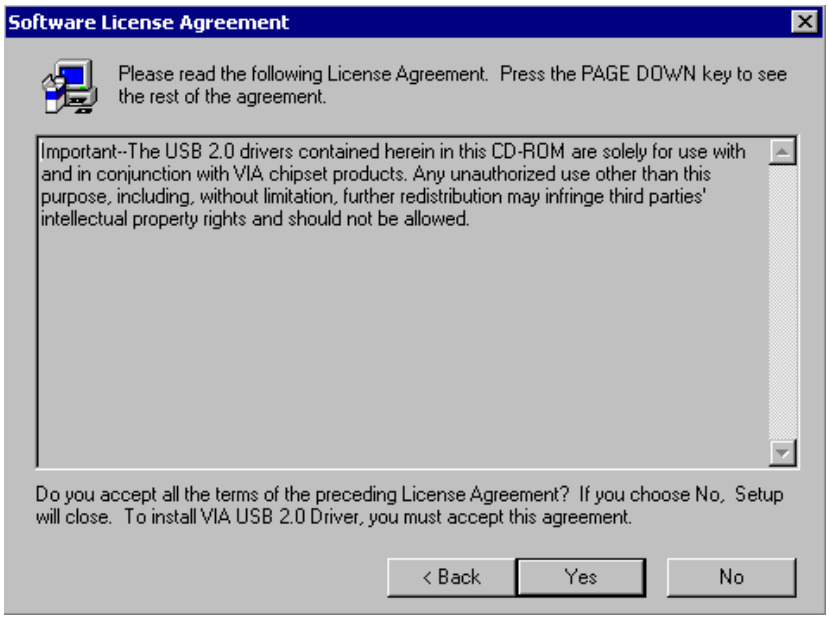
The following steps will install the display driver for the VIA VT6202 USB2.0 controller.

1. Find the directory of the driver disk with VIA VT6202 USB2.0 driver. Double click the icon 'setup' on the folder. This should start the driver setup process as shown below:

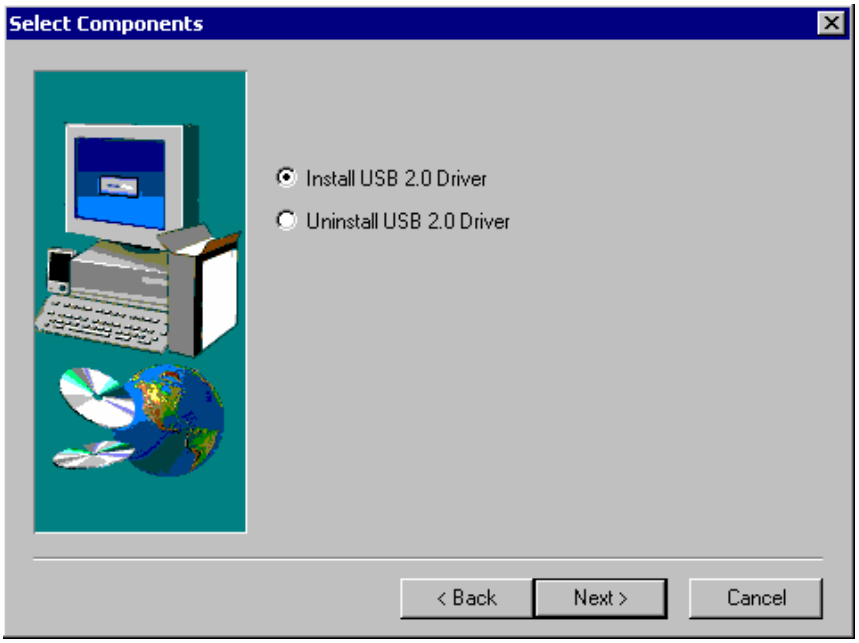
2. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'


Welcome
Welcome to the VIA USB 2.0 Driver Setup program. This program will install VIA USB 2.0 Driver on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel

3. Click the '*Yes*' to continue the driver install. If you want to stop the installation, click the '*No*'


Software License Agreement
Please read the following License Agreement. Press the PAGE DOWN key to see the rest of the agreement.
Important--The USB 2.0 drivers contained herein in this CD-ROM are solely for use with and in conjunction with VIA chipset products. Any unauthorized use other than this purpose, including, without limitation, further redistribution may infringe third parties' intellectual property rights and should not be allowed.
Do you accept all the terms of the preceding License Agreement? If you choose No, Setup will close. To install VIA USB 2.0 Driver, you must accept this agreement.
< Back
Yes
No

4. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'



5. Click the '*Yes*' to continue the driver install. If you want to stop the installation, click the '*No*'

Software License Agreement
Please read the following License Agreement. Press the PAGE DOWN key to see the rest of the agreement.
SUPPLEMENTAL END USER LICENSE AGREEMENT FOR MICROSOFT SOFTWARE ("Supplemental EULA")
IMPORTANT: READ CAREFULLY - The Microsoft Corporation ("Microsoft") operating system components accompanying this Supplemental EULA, including any "online" or electronic documentation ("OS Components") are subject to the terms and conditions of the agreement under which you have licensed the applicable Microsoft operating system product described below (each an "End User License Agreement" or "EULA") and the terms and conditions of this Supplemental EULA. BY INSTALLING, COPYING, ACCESSING, OR OTHERWISE USING THE OS COMPONENTS, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE APPLICABLE OPERATING SYSTEM PRODUCT EULA AND THIS SUPPLEMENTAL EULA. IF YOU DO NOT AGREE TO THESE TERMS AND CONDITIONS, DO NOT INSTALL, COPY OR USE THE OS COMPONENTS.
Do you accept all the terms of the preceding License Agreement? If you choose No, Setup will close. To install VIA USB 2.0 Driver, you must accept this agreement.
< Back
Yes
No

6. To complete the USB Adapter driver installation, reboot the computer by clicking the '*Print to File*' button in the window shown below.

5.4 Driver Installation for Audio Adapter

5.4.1 Windows 9X

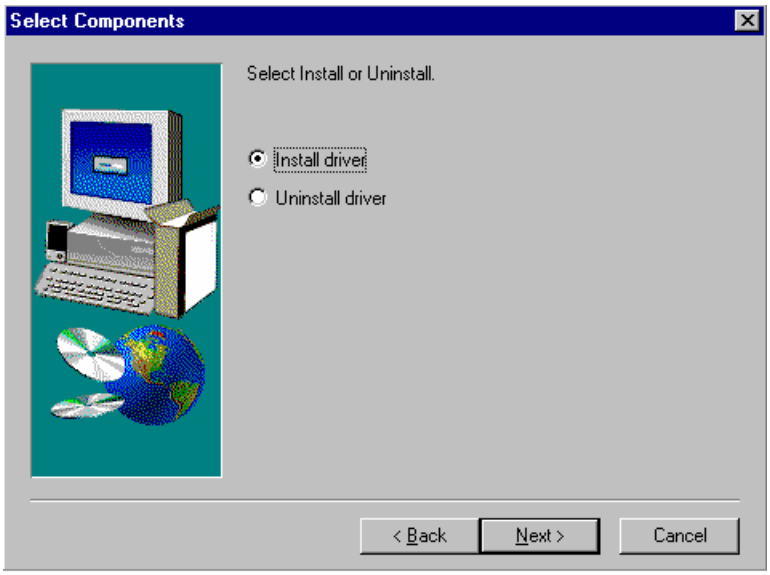
The following steps will install the display driver for the VIA VT82C686B Audio controller.

1. Find the directory of the driver disk with VIA VT82C686B Audio driver. Double click the icon 'setup' on the folder. This should start the driver setup process as shown below:

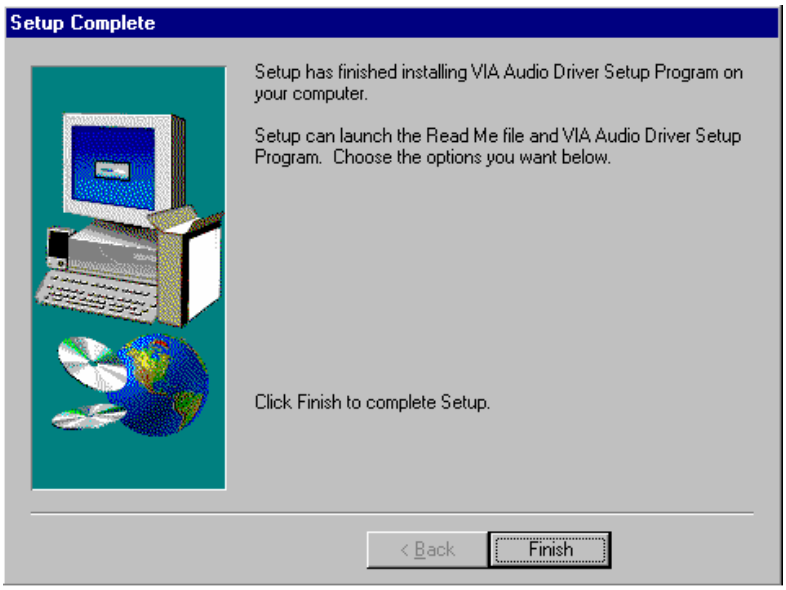
2. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'

Welcome
Welcome to the VIA Audio Driver Setup Program Setup program. This program will install VIA Audio Driver Setup Program on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel

3. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'



4. To complete the display driver installation, reboot the computer by clicking the '*Finish*' button in the window shown below.

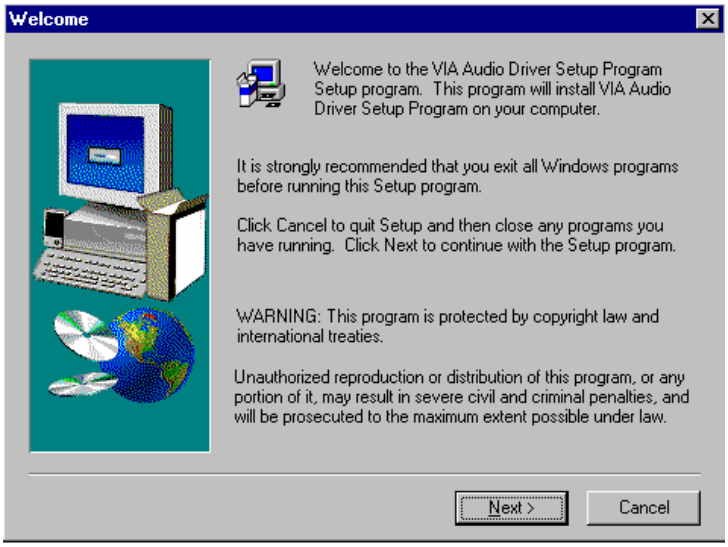

Setup Complete
Setup has finished installing VIA Audio Driver Setup Program on your computer.
Setup can launch the Read Me file and VIA Audio Driver Setup Program. Choose the options you want below.
Click Finish to complete Setup.
< Back
Finish

5.4.2 Windows 2000

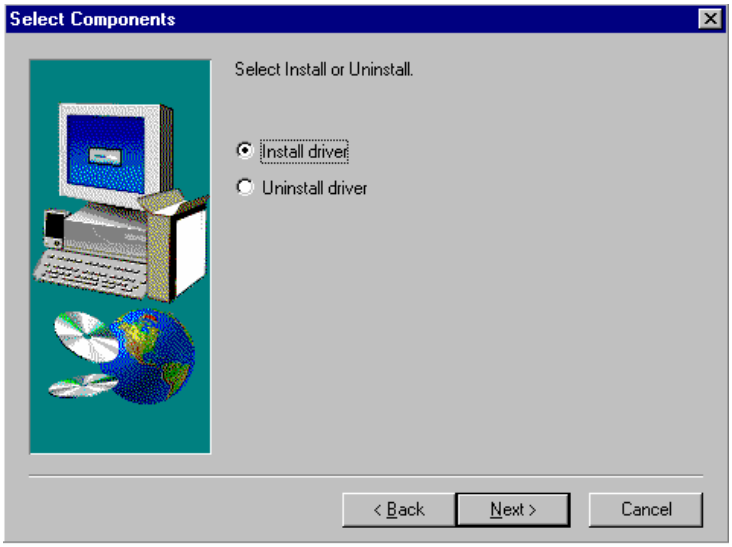
The following steps will install the display driver for the VIA VT82C686B Audio controller.

1. Find the directory of the driver disk with VIA VT82C686B Audio driver. Double click the icon 'setup' on the folder. This should start the driver setup process as shown below:

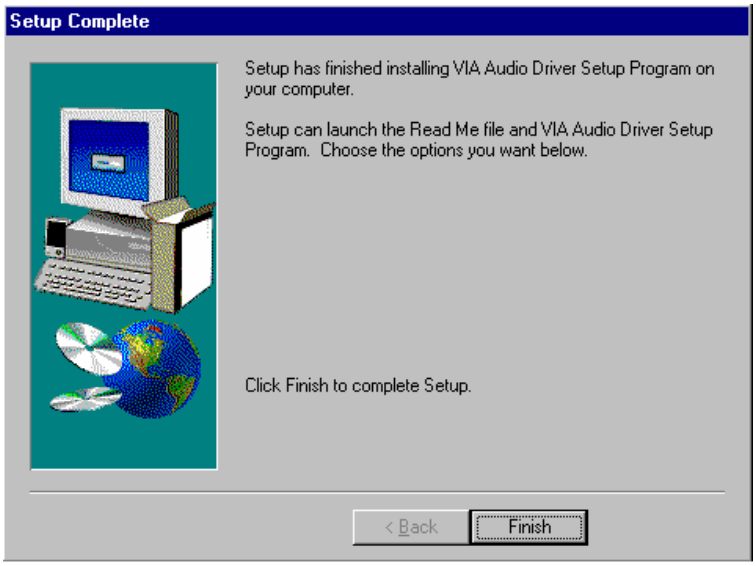
2. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'


Welcome
Welcome to the VIA Audio Driver Setup Program Setup program. This program will install VIA Audio Driver Setup Program on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel

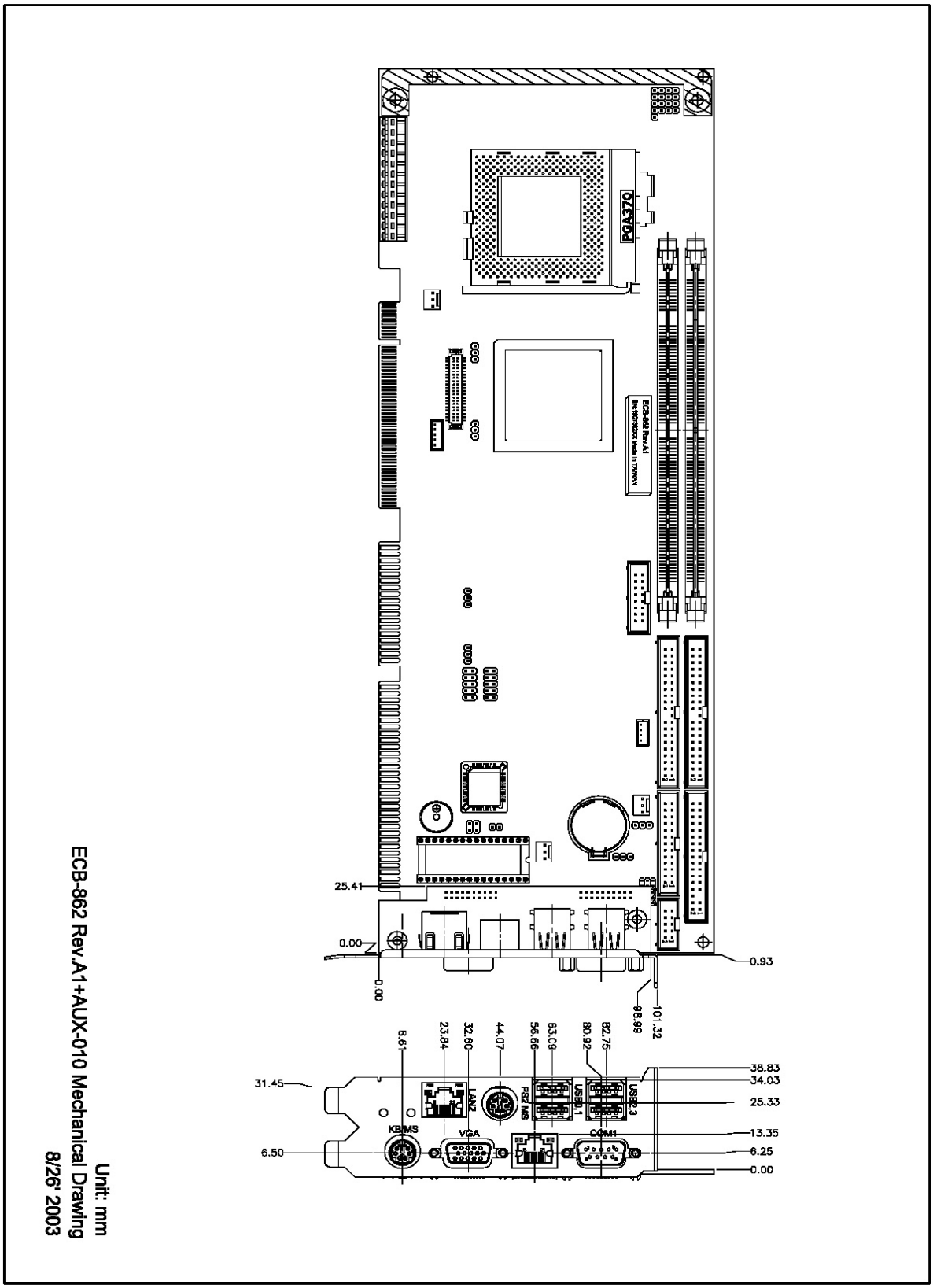
3. Click the '*Next*' to continue the driver install. If you want to stop the installation, click the '*Cancel*'



4. To complete the display driver installation, reboot the computer by clicking the '*Finish*' button in the window shown below.


Setup Complete
Setup has finished installing VIA Audio Driver Setup Program on your computer.
Setup can launch the Read Me file and VIA Audio Driver Setup Program. Choose the options you want below.
Click Finish to complete Setup.
< Back
Finish

6. Measurement Drawing



Appendix A: BIOS Revisions

BIOS Rev.

New Features

Bugs/Problems Solved

Known Problems

Appendix B: System Resources

Memory Map

The following table indicates memory map of ECB-862. The address ranges specify the runtime code length.

Address Range	Description	Note
00000000h-0009FFFFh	System board extension for ACPI BIOS	
000A0000h-000AFFFFh	VIA Tech VT8361/VT8601 Graphics Controller	
000B0000h-000BFFFFh	VIA Tech VT8361/VT8601 Graphics Controller	
000C0000h-000C7FFFh	VIA Tech VT8361/VT8601 Graphics Controller	
000C8000h-000CBFFFh	System board extension for ACPI BIOS	
000F0000h-000F7FFFh	System board extension for ACPI BIOS	
000F8000h-000FBFFFh	System board extension for ACPI BIOS	
000FC000h-000FFFFFh	System board extension for ACPI BIOS	
00100000h-1F7EFFFFh	System board extension for ACPI BIOS	
1F7F0000h-1F7FFFFFh	System board extension for ACPI BIOS	
E4000000h-E6FFFFFFh	PCI standard host CPU bridge	
E4000000h-E6FFFFFFh	PCI standard PCI-to-PCI bridge	
E4000000h-E400FFFFh	VIA Tech VT8361/VT8601 Graphics Controller	
E5000000h-E57FFFFFh	VIA Tech VT8361/VT8601 Graphics Controller	
E5800000h-E5FFFFFFh	VIA Tech VT8361/VT8601 Graphics Controller	
E6000000h-E601FFFFh	VIA Tech VT8361/VT8601 Graphics Controller	
E7000000h-E70000FFh	Realtek RTL8139/810X Family PCI Fast Ethernet NIC	
E7001000h-E70010FFh	Realtek RTL8139/810X Family PCI Fast Ethernet NIC	
E7002000h-E70020FFh	VIA PCI to USB Enhanced Host Controller	
FEE00000h-FEE00FFFh	System board extension for ACPI BIOS	
FFFF0000h-FFFFFFFFh	System board extension for ACPI BIOS	

I/O – Map

Certain I/O addresses are subject to change during boot as PnP managers may relocate devices or functions. The addresses shown in the table are typical locations.

I/O Port	Description	Note
0000h-000Fh	Direct memory access controller	
0010h-001Fh	Motherboard resources	
0020h-0021h	Programmable interrupt controller	
0022h-003Fh	Motherboard resources	
0040h-0043h	System timer	
0044h-005Fh	Motherboard resources	
0060h-0060h	Standard 101/102-Key or Microsoft Natural Keyboard	
0061h-0061h	System speaker	
0062h-0063h	Motherboard resources	
0064h-0064h	Standard 101/102-Key or Microsoft Natural Keyboard	
0065h-006Fh	Motherboard resources	
0070h-0073h	System CMOS/real time clock	
0074h-007Fh	Motherboard resources	
0080h-0090h	Direct memory access controller	
0091h-0093h	Motherboard resources	
0094h-009Fh	Direct memory access controller	
00A0h-00A1h	Programmable interrupt controller	
00A2h-00BFh	Motherboard resources	
00C0h-00DFh	Direct memory access controller	
00E0h-00EFh	Motherboard resources	
00F0h-00FFh	Numeric data processor	
0170h-0177h	Secondary IDE controller (dual fifo)	
0170h-0177h	VIA Bus Master PCI IDE Controller	
01F0h-01F7h	Primary IDE controller (dual fifo)	
01F0h-01F7h	VIA Bus Master PCI IDE Controller	
02F8h-02FFh	Communications Port (COM2)	
0376h-0376h	VIA Bus Master PCI IDE Controller	
0376h-0376h	Secondary IDE controller (dual fifo)	
0378h-037Fh	Printer Port (LPT1)	
03B0h-03BBh	VIA Tech VT8361/VT8601 Graphics Controller	
03C0h-03DFh	VIA Tech VT8361/VT8601 Graphics Controller	
03F0h-03F5h	Standard Floppy Disk Controller	
03F6h-03F6h	Primary IDE controller (dual fifo)	

I/O Port	Description	Note
03F6h-03F6h	VIA Bus Master PCI IDE Controller	
03F7h-03F7h	Standard Floppy Disk Controller	
03F8h-03FFh	Communications Port (COM1)	
04D0h-04D1h	Motherboard resources	
0CF8h-0CFFh	PCI bus	
1000h-101Fh	VIA Tech 3038 PCI to USB Universal Host Controller	
4000h-407Fh	PCI bus	
4080h-40FFh	PCI bus	
5000h-500Fh	PCI bus	
6000h-607Fh	PCI bus	
C000h-C00Fh	VIA Bus Master PCI IDE Controller	
C000h-C007h	Primary IDE controller (dual fifo)	
C008h-C00Fh	Secondary IDE controller (dual fifo)	
C400h-C41Fh	VIA Tech 3038 PCI to USB Universal Host Controller	
CC00h-CCFFh	VIA AC'97 Audio Controller (WDM)	
D000h-D003h	VIA AC'97 Audio Controller (WDM)	
D400h-D403h	VIA AC'97 Audio Controller (WDM)	
D800h-D8FFh	Realtek RTL8139/810X Family PCI Fast Ethernet NIC	
DC00h-DCFFh	Realtek RTL8139/810X Family PCI Fast Ethernet NIC	
E000h-E01Fh	VIA Tech 3038 PCI to USB Universal Host Controller	
E400h-E41Fh	VIA Tech 3038 PCI to USB Universal Host Controller	

Interrupt Usage.

The actual interrupt settings depend on the PnP handler, the table below indicates the typical settings.

Interrupt	Description	Note
00	System timer	
01	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard	
02	Programmable interrupt controller	
03	Communications Port (COM2)	
04	Communications Port (COM1)	
05	ACPI IRQ Holder for PCI IRQ Steering	
05	VIA Tech 3038 PCI to USB Universal Host Controller	
05	VIA Tech VT8361/VT8601 Graphics Controller	
06	Standard Floppy Disk Controller	
07	Printer Port (LPT1)	
08	System CMOS/real time clock	
09	ACPI IRQ Holder for PCI IRQ Steering	
09	VIA Tech 3038 PCI to USB Universal Host Controller	
10	VIA Tech 3038 PCI to USB Universal Host Controller	
10	ACPI IRQ Holder for PCI IRQ Steering	
10	Realtek RTL8139/810X Family PCI Fast Ethernet NIC	
10	VIA Tech 3038 PCI to USB Universal Host Controller	
11	VIA PCI to USB Enhanced Host Controller	
11	ACPI IRQ Holder for PCI IRQ Steering	
11	Realtek RTL8139/810X Family PCI Fast Ethernet NIC	
11	VIA AC'97 Audio Controller (WDM)	
11	SCI IRQ used by ACPI bus	
12	PS/2 Compatible Mouse Port	
13	Numeric data processor	
14	Primary IDE controller (dual fifo)	
14	VIA Bus Master PCI IDE Controller	
15	Secondary IDE controller (dual fifo)	
15	VIA Bus Master PCI IDE Controller	

DMA-channel Usage

DMA-channel	Description	Note
DMA2	Standard Floppy Disk Controller	
DMA4	Direct memory access controller	

Appendix C: AWARD BIOS POST Messages

During the Power On Self-Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message.

If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep

Currently there are two kinds of beep codes in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that your DRAM error has occurred. This beep code consists of a single long beep repeatedly.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS

CMOS Battery Has Failed

CMOS battery is no longer functional. It should be replaced.

CMOS Checksum Error

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

Disk Boot Failure, Insert System Disk And Press Enter

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

Diskette Drives Or Types Mismatch Error – Run Setup

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

Display Switch Is Set Incorrectly

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

Display Type Has Changed Since Last Boot

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

EISA Configuration Checksum Error
Please Run EISA Configuration Utility

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.

EISA Configuration Is Not Complete
Please Run EISA Configuration Utility

The slot configuration information stored in the EISA non-volatile memory is incomplete.

Note: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Error Encountered initializing Hard Drive

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

Error Initializing Hard Disk Controller

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

Floppy Disk Cntrlr Error Or No Cntrlr Present

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

Invalid EISA Configuration
Please Run EISA Configuration Utility

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Keyboard Error Or No Keyboard Present

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory Address Error At...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory Parity Error At...

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory Size Has Changed Since Last Boot

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

Memory Verify Error At...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

Offending Address Not Found

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

Offending Segment

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

Press A Key To Reboot

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

Press F1 To Disable NMI, F2 To Reboot

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM Parity Error – Checking For Segment...

Indicates a parity error in Random Access Memory.

Should Be Empty But EISA Board Found
Please Run EISA Configuration Utility

A valid board ID was found in a slot that was configured as having no board ID.

NOTE; When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Should Have EISA Board But Not Found
Please Run EISA Configuration Utility

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Slot Not Empty

Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

System Halted, (CTRL-ALT-DEL) To Reboot...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

Wrong Board In Slot
Please Run EISA Configuration Utility
The board ID does not match the ID stored in the EISA non-volatile memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Floppy Disk(s) Fail (80) → Unable To Reset Floppy Subsystem.

Floppy Disk(s) Fail (40) → Floppy Type Dismatch.

Hard Disk(s) Fail (80) → HDD Reset Failed

Hard Disk(s) Fail (40) → HDD Controller Diagnostics Failed.

Hard Disk(s) Fail (20) → HDD Initialization Error.

Hard Disk(s) Fail (10) → Unable To Recalibrate Fixed Disk.

Hard Disk(s) Fail (08) → Sector Verify Failed.

Keyboard Is Locked Out - Unlock The Key.
BIOS detect the keyboard is locked. P17 of keyboard controller is pulled low.

Keyboard Error Or No Keyboard Present.
Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST Loop.
System will repeat POST procedure infinitely while the P15 of keyboard controller is pulled low. This is also used for M/B burn in test.

BIOS ROM Checksum Error - System Halted.
The checksum of ROM address F0000H-FFFFFH is bad.

Memory Test Fail.
BIOS reports the memory test fails if the onboard memory is tested error.

Appendix D: AWARD BIOS POST Codes

POST Code (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved

POST Code (hex)	Description
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. 3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5. Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer

POST Code (hex)	Description
28h	Reserved
29h	1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address. 2. Initialize the APIC for Pentium class CPU. 3. Program early chipset according to CMOS setup. Example: onboard IDE controller. 4. Measure CPU speed. 5. Invoke video BIOS.
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	1. Initialize multi-language 2. Put information on screen display, including Award title, CPU type, CPU speed ….
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved

POST Code (hex)	Description
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program writes allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onbaord_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse

POST Code (hex)	Description
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM…..
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: ◆Clear EPA or customization logo.
80h	Reserved
81h	Reserved

POST Code (hex)	Description
82h	1. Call chipset power management hook. 2. Recover the text fond used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95h	1. Program daylight saving 2. Update keyboard LED & typematic rate
96h	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)